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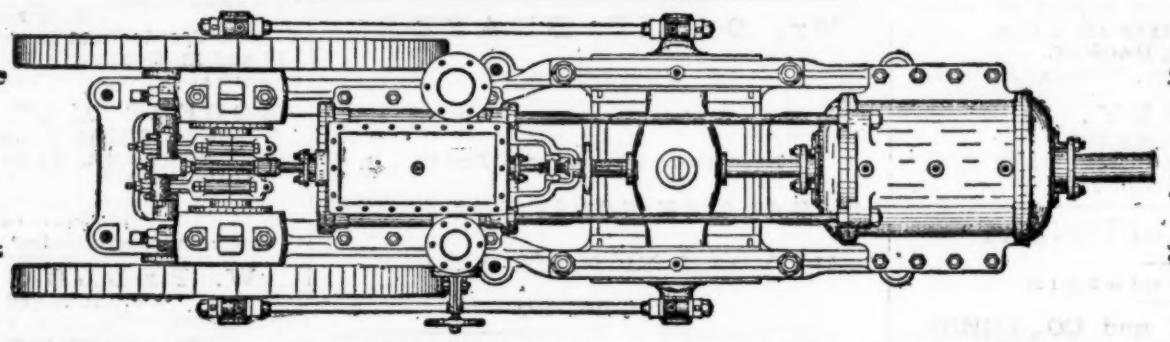

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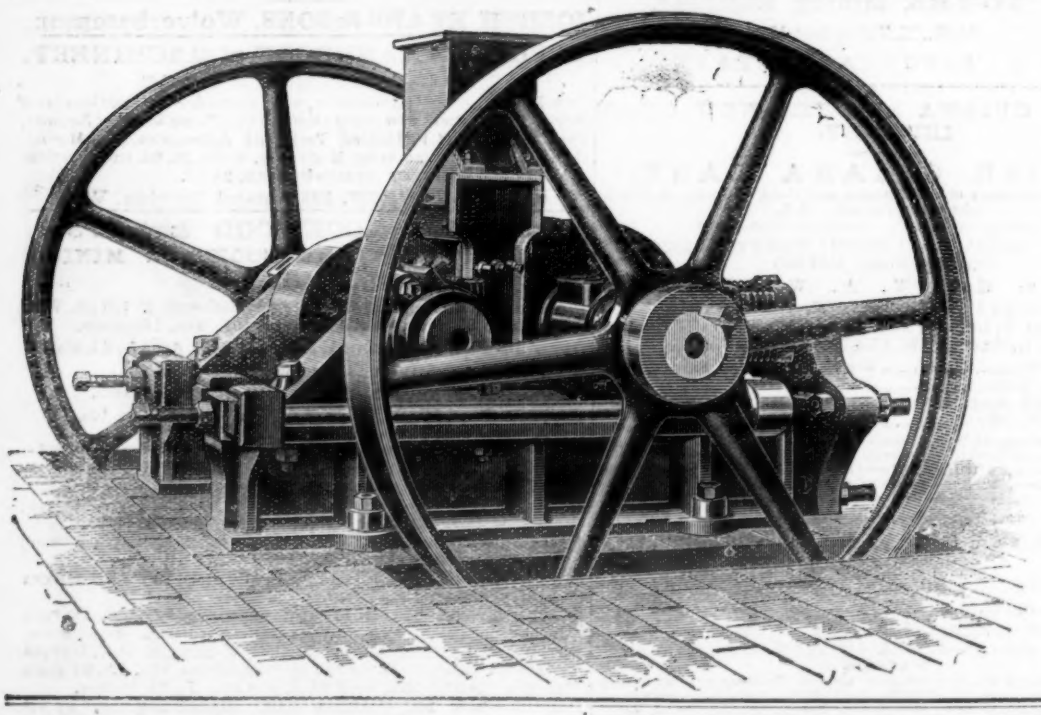

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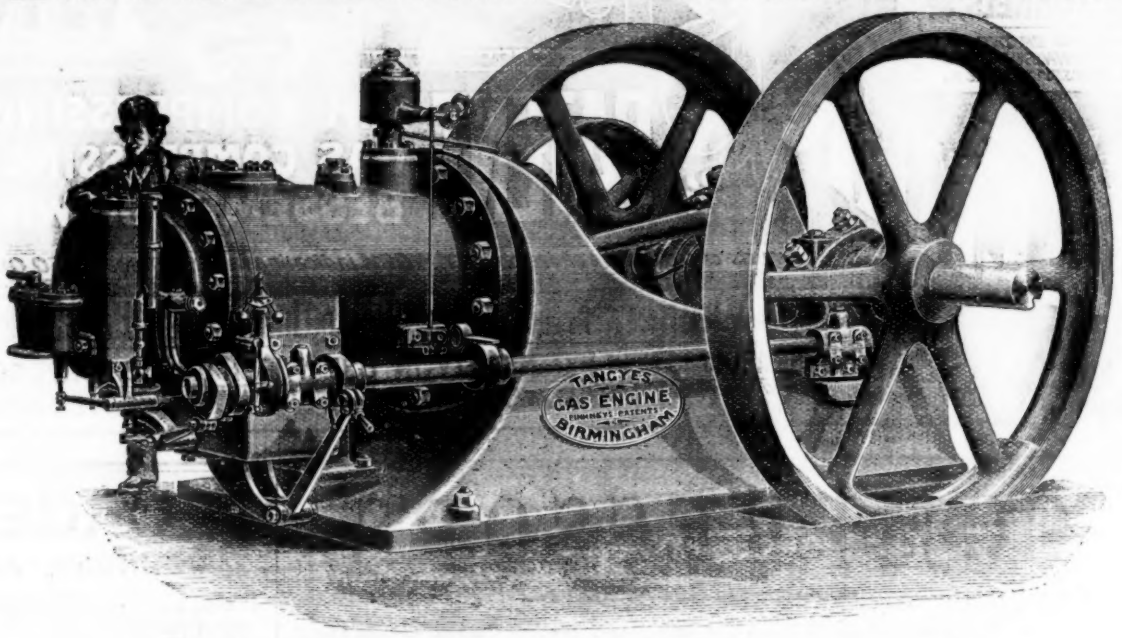

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Telegrams:
"EVANS," Wolverhampton.

Write for
"MINING PUMP" Catalogue.

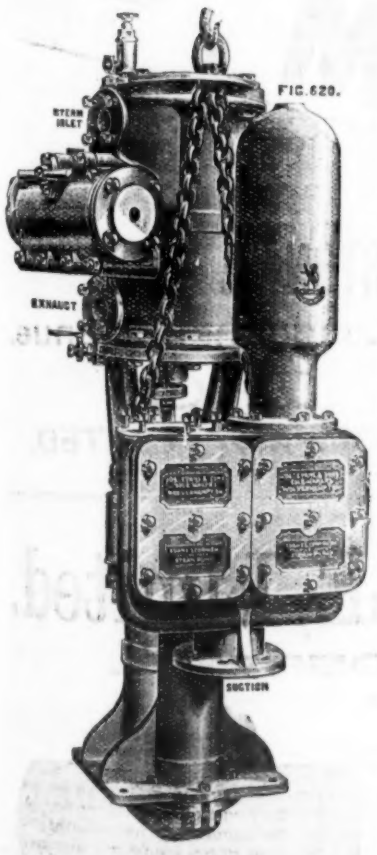
Nat. TELEPHONE, No. 7039. TRADE MARK.

SINKING PUMPS FOR MINES.

NO TAPPETS, LEVERS, OR EXTRANEOUS GEAR.

"EVANS and TONKIN'S" Patent "CORNISH" SINKING PUMPS have been used on all the recent modern sinking operations of importance, including

North's Navigation Collieries, the Blackwall Tunnel, the Barry Dock Extension, the Griff Colliery Sinkings, the Coppice Colliery, the Fishley Colliery, the Moss Hall Colliery, the North Walbottle Colliery, the West Hallam Colliery, and other large Sinkings, also North Wales, Rand, West African, West Australian, Victorian, South American Gold Mines, &c., &c.



"GRIFF" PATTERN "CORNISH" SINKING PUMP.

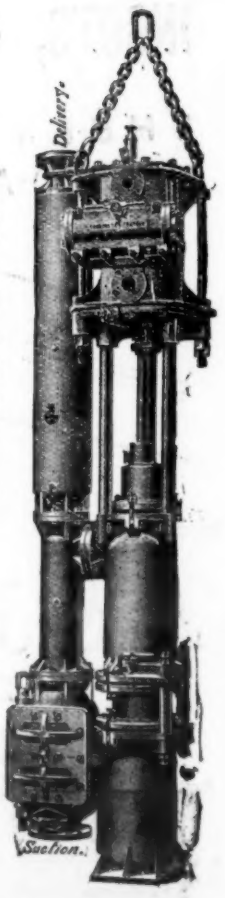
London Office
16, UNION COURT, OLD BROAD ST., E.C.

DEPOTS:
NEWCASTLE-ON-TYNE.
GLASGOW, WAKEFIELD,
MANCHESTER,
CARDIFF, and BELFAST.

JOHANNESBURG.
Etc.

FIG. 875, "FLUOMETER" PATENT STEAM VACUUM PUMP.

The "CORNISH" STEAM PUMP.
The "DUPLEX" STEAM PUMP.
The "RAM" STEAM PUMP.
The "RELIABLE" STEAM PUMP.
DONKEY PUMPS.
HORSE PUMPS.
POWER PUMPS.
AIR COMPRESSORS,
&c.



"STRAIGHT-LINE" PATTERN SINKING PUMP

CULWELL WORKS,

WOLVERHAMPTON.

WALKERS' PATENT INDESTRUCTIBLE VENTILATING FANS FOR MINES, TUNNELS, &c.

CONSTRUCTORS OF THE VENTILATING MACHINERY AT THE SEVERN AND MERSEY TUNNELS.

PATENT ANTI-VIBRATION SHUTTER Applicable to all Enclosed Fans

WALKER BROTHERS

Engineers, Pagefield Ironworks, WIGAN.

PATENT AIR COMPRESSING ENGINES
GAS COMPRESSING ENGINES
BESSEMER BLOWING ENGINES

upwards of 400 of the above now AT WORK indicating in the aggregate 150,000 Horse-Power

Fisher & Walkers' Patent Friction Clutch & Underground Haulage Machinery

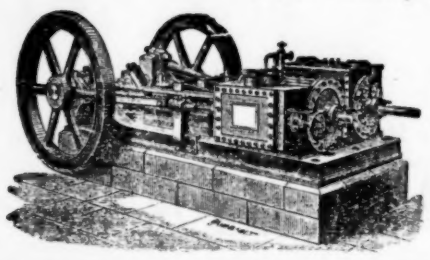
THIS GEARING IS NOW EXTENSIVELY IN USE FOR HAULAGE PURPOSES.

The objects attained are SIMPLICITY, ENDURANCE OF THE MACHINERY AND ROPES with a MINIMUM EXPENDITURE OF POWER.

AIR COMPRESSORS

With Compound Air and Steam Cylinders,

Fitted with SCHRAM'S Inlet and Outlet Valves giving the greatest efficiency.



SCHRAM'S IMPROVED
Rock Boring Machines.

Supplied to the Indian, Colonial, and other Governments.
2500 IN USE in all PARTS of the WORLD.

DIAMOND PROSPECTING DRILLS.

"OPTIMUS" COMPOUND ROCK DRILL.
(P. J. OGLE'S PATENT.)

Consumes 40 per cent. less Compressed Air than any other Drill at the same time giving the most effectual results.

ESTIMATES AND FULL PARTICULARS ON APPLICATION.

RICHARD SCHRAM & CO., 17a, Great George Street, Westminster, S.W.

TELEGRAMS "SCHRAM LONDON," A1, A.B.C. and The Engineering Telegraph Codes Used.

GEORGE GREEN,
FOUNDRY, ABERYSTWYTH.

SILVER MEDALS AWARDED AT THE ROYAL CORNWALL POLYTECHNIC, 1872 & 1876; GOLD MEDAL AWARDED AT THE GREAT INTERNATIONAL MINING EXHIBITION, CRYSTAL PALACE, 1890.

ONLY AWARDS GIVEN FOR CONCENTRATION PLANTS.

GREEN'S LATEST IMPROVED
Self-Acting or Automatic Ore Dressing Machinery.

A Special Plant, on a reduced scale, has been erected at the Works by which samples of METALLIC ORES up to Five Tons may be treated, and the commercial value determined. In this way the most suitable arrangement of Plant is ascertained, a considerable advantage to intending Purchasers of Crushing and Concentrating Plant.

GOLD STAMP AND OTHER MILLS.
Estimates, Catalogues, and Full Particulars on Application.

Telegrams—Green, Foundry, Aberystwyth.

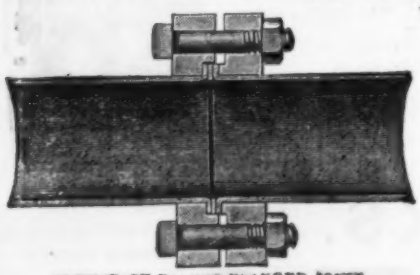
For PURE ALUMINIUM
98 to 99½ per cent. (98 per cent. minimum guaranteed) in
INGOTS, STICKS, & ROLLING SLABS;
ALSO FOR
SHEETS, &c., AND
FERRO-ALUMINIUM.

ALUMINIUM.

APPLY TO
HENRY R. MERTON & CO.,
2, Metal Exchange Buildings, Leadenhall Avenue.
LONDON, E.C.
AGENTS FOR THE BRITISH ALUMINIUM COMPANY, LIMITED.

A. & J. STEWART and CLYDESDALE, Limited.
Glasgow, Coatbridge, and Mossend.

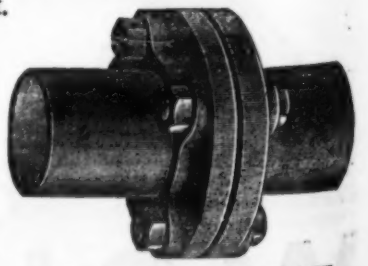
WROUGHT IRON WELDED TUBES and FITTINGS for GAS, WATER, and STEAM.
Light Lap-welded Wrought-iron and Steel Tubes
(SPECIALLY ADAPTED FOR MINES).
With Patent Flanged Joints (as illustrated) for the Conveyance of Water, Steam, and Air, at High and Low Pressures.



SECTION OF PATENT FLANGED JOINT

LAP-WELDED IRON AND STEEL BOILER TUBES
FOR LOCOMOTIVE, MARINE, AND OTHER MULTITUBULAR BOILERS.

STEEL & IRON PLATES FOR BOILERS, BRIDGES, &c.



PLAN OF PATENT FLANGED JOINT.

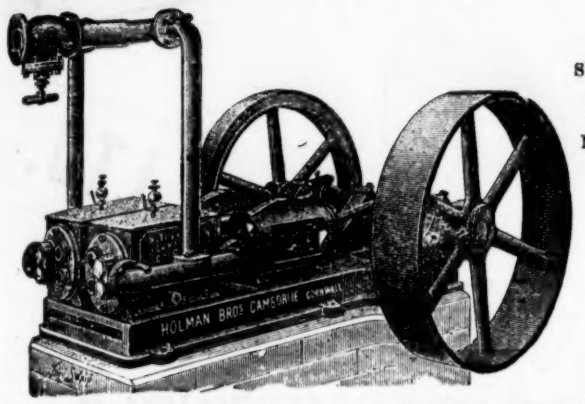
Head Offices 41, OSWALD STREET, GLASGOW.

HOLMAN Bros., Camborne, Cornwall.

ESTABLISHED 1839.

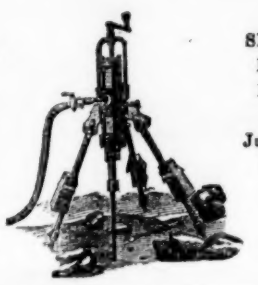
Patentees and Sole Makers of

"THE CORNISH" ROCK DRILL and "THE CORNISH" COMPRESSOR.



FIRST SILVER MEDAL, Highest Award, Mining Institute Contest, 1881.

Three Makers represented.



FIRST SILVER MEDAL Highest Award, Royal Cornwall Polytechnic Jubilee Exhibition Contest, 1882.

Five Makers represented.

AWARDED SILVER MEDAL INTERNATIONAL INVENTIONS EXHIBITION, 1885.

RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS**, equal to five times the Speed of Hand Labour

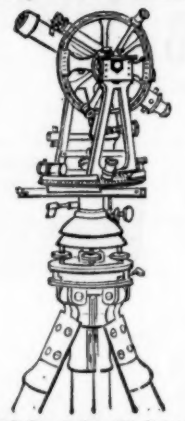
At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES**, and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

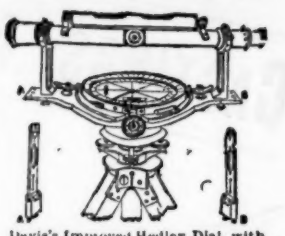
London Offices: 7 and 9, LEADENHALL BUILDINGS, E.C.

JOHN DAVIS AND SON.

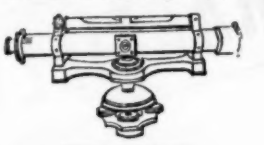
ALL SAINTS WORKS, DERBY;
118, NEWGATE STREET, LONDON.



Transit Theodolite with Patent Hoffman Tripod Head, and Trough Compass.



Davis's Improved Hedley Dial, with Telescope and Sights Interchangeable and Patent Hoffman Tripod Head



Dumpy Level with Hoffman Patent Tripod Head.

MINING, SURVEYING, AND ENGINEERING INSTRUMENTS.

THEODOLITES. LEVELS. TACHEOMETERS.

Davis's Improved Hedley Miners' Dials, with HOFFMAN PATENT TRIPOD HEAD;
AND ALL DESCRIPTIONS OF MATHEMATICAL AND MINING SURVEYING INSTRUMENTS.

Revised Illustrated Catalogues Free to any Part the World.
SECTION (A) MATHEMATICAL DEPARTMENT AND SAFETY LAMPS
SECTION (B) ELECTRICAL DEPARTMENT.

Gold Medal Awarded Mining Exhibition, 1890.
A. B. C. CABLE CODE, 4TH EDITION.

Jeffrey Electric Coal Cutter and Drill may be seen at work in the Model Mine, Cardiff Exhibition, Instruments, &c., Stand No. 315.

AWARDS: CRYSTAL PALACE, 1890; TASMANIA, 1891; KIMBERLEY, 1892.

CONCENTRATION.

The Clarkson-Stanfield Ore Reduction Co. (Limited).

In the CLARKSON-STANFIELD process of Concentrating Refractory and Complex Ores no water is required; dust is reduced to a minimum; the loss of Mineral through water-borne Slimes is obviated.

OUTPUT ½ TO 2 TONS PER HOUR, ACCORDING TO SIZE OF MACHINE.

CONCENTRATOR TO BE SEEN IN OPERATION AT THE COMPANY'S ONLY ADDRESS,

6, COLONIAL AVENUE, MINORIES, LONDON, E.

The Machine is superior to Sieves for Sizing Homogeneous Substances, such as Emery, Sand, and Powders, ana may be used to great advantage in the preparation of Ochre.

N.B.—The owners of the Carndochan Mine, near Bala, North Wales, will, by arrangement, show their CLARKSON-STANFIELD plant working on a Refractory Low Grade Gold Ore.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs. Rayner and Company, Patent Agents, 37, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

19139 **Ambrose H. Kite and Frederick M. Stallard**, 55, Chancery Lane, London.—Improvements in earth boring apparatus.
19432 **William Phillips Thompson**, 6, Lord Street, Liverpool.—Improvements in rock drilling machines.
19375 **William George Gass and James Tonye**, Atlas Foundry, Nelson Street, Bolton.—An improved breaking-down appliance for use in coal mining and for similar purposes.
19381 **William Edward Garforth, Richard Sutcliffe**, and **William Buxton**, 30, Park Row, Leeds.—Improvements in or in connection with coal-cutting machines.
19401 **Gustav Opitz**, 13, Coleman Street, London.—Improved method of and means for supplying fuel to furnaces and the like.
19551 **Ockwell Hawkins**, The Laurels, Llantrissant, Glamorganshire.—A rotary engine.
19538 **James Hill**, 70, Wellington Street, Glasgow.—Improvements in and connected with steam boiler furnaces.
19512 **Jan von Grabinski**, Monument Chambers, London.—Improvements in tubular boilers and superheaters for the same.
19467 **Edward Ethel Gold**, 55, Chancery Lane, London.—Improvements in steam radiators.
19443 **Etienne Lagosse**, 4, South Street, Finsbury, London.—Improvements in steam boilers.
19431 **William Phillips Thompson**, 6, Lord Street, Liverpool.—Improvements in or appertaining to thrust bearings for shafts.
19383 **Wallace Fairweather**, 62, St. Vincent Street, Glasgow.—Improved feed water heater for steam boilers.
19359 **Thomas Robinson**, 4, Clayton Square, Liverpool.—Improvements in cupola furnaces.
19322 **Eugène Louis Doyen**, 47, Lincoln's Inn Fields, London.—Improvements in flexible transmission shafts.

The following specifications will be published on September 26:—
18634 **MacArthur**.—Obtaining precious metals from solutions.
18362 **Leigh**.—Rotary steam engines.
18988 **Grierson and Calveley**.—Blast apparatus for locomotives and like engines.
18840 **Besley**.—Apparatus for superheating steam.
19072 **Haworth**.—Steam engines.
18625 **Mills**.—Liquid fuel stoves or furnaces.
21326 **Spretley**.—Machines for breaking or crushing ore, rock, and the like.
19139 **Woolford**.—Process for extracting precious metals from refractory ores
14485 **Chamberlain and Beebe**.—Petroleum burning furnace.
17710 **Nicholson**.—Shaft couplings.

MESSRS. J. H. COLLINS and SONS, Mining and Metallurgical Engineers, of 14 and 15, Broad-street Avenue, E.C., inform us that they have established a branch of their business at Bathurst, New South Wales, under the charge of their Mr. H. F. Collins, A.R.S.M., A.M.I.C.E., &c. They are now in a position to undertake mining managements in any part of New South Wales, and to make expert examinations of and reports on mining properties anywhere in the Australian Colonies or in New Zealand.

BLAST FURNACE CONSTRUCTION.—A new design for blast furnace construction, claimed to be an improvement on the present practice of iron ore production, has just been introduced at Sharon, U.S.A. It is known as Danber's gas blast furnace, and is designed to dispense with coke or charcoal fuel in the production of pig iron.

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

Ormus Extended Gold Mine (Limited).—Registered September 4 by Wallance Birkbeck and Barnard, Lombard House, George Yard, with a capital of £100,000, in £1 shares, to construct, erect, carry out, equip, acquire, maintain, work, develop, and administer public works and conveniences of all kinds, including railways, tramways, roads, tunnels, harbours, docks, shipways, shipping places, piers, jetties, wharves, staiths, quays, canals, reservoirs, embankments, irrigation, reclamation, improvements, sewage, drainage, sanitary, water, gas, electric light, telephonic and power supply works, houses, offices, hotels, warehouses, markets, public buildings, and all other works or conveniences of public utility.

Vaal River Minerals Syndicate (Limited).—Registered September 4 by the Transvaal Exploring Company (Limited), 25, Abchurch Lane, London, E.C., with a capital of £5,000, in £1 shares, to acquire mines, &c., in the South African Republic, and to develop and turn to account the same in such manner as the company shall see fit.

Trail Creek Gold Syndicate (Limited).—Registered September 3 by Ingle, Holmes, and Sons, 21, Threadneedle-street, E.C., with a capital of £1 0 in £1 shares, to acquire mines, mining rights, &c., in any part of the world.

Wilson's and Furness-Leyland Line (Limited).—Registered September 4 by W. A. Crump and Son, 10, Pullipot-lane, E.C., with a capital of £350,000 in £10 shares, of which 15,000 are 5½ per cent. preference shares and 20,000 ordinary shares.

Rhodesia Transport (Limited).—Registered September 7 by Ingle, Holmes and Sons, 21, Threadneedle-street, E.C. Capital £130,000, in £1 shares. Objects: To acquire grants, concessions or leases of any lands, mines or other properties supposed to contain minerals or precious stones, &c. Registered office, 22, Martin's-lane, Cannon-street, E.C.

Incorporated Gold Mines of British Columbia (Limited).—Registered September 5 by Emanuel and Simmonds, 36, Finsbury Circus, E.C. Capital £300,000, in £1 shares. Objects: To acquire any mines, mining rights, or other property in British Columbia, and develop, work, deal with and turn to account the same in such manner as the company shall see fit. Registered office, 45 and 46, Broad-street Avenue, Blomfield-street, E.C.

Golden Gleam Gold Mining Company (Limited).—Registered September 7 by Rodway, Barretz, and Wilkinson, 28, Coleman Street. Capital £100,000, in £1 shares. Objects: To acquire and turn to account any mines, mining rights, &c., in Australia or elsewhere; and to develop, work, and deal with the same in such manner as the company shall see fit; and, further, to construct, erect, equip, acquire, maintain, develop, and administer public works and conveniences of all kinds.

Jackson Exploration and Development Company (Limited).—Registered September 9 by Fowell and Burt, 28 and 29, St. Swithin's Lane. Capital £200,000, in 5s. shares. Objects: To acquire by purchase or otherwise, any mines, mining, water and other rights, &c., in Australia, New Zealand, South Africa, the United States of America, or elsewhere, and to develop, deal with and turn to account the same. Registered office, Poultry Chambers, 11, Poultry, E.C.

Standard Cyanide Manufacturing Company (Limited).—Registered September 9 by E. J. Bellord and Co., 7, King Street, Cheapside, E.C. Capital £50,000, in £1 shares. Objects: To adopt and carry into effect a certain agreement for the acquisition of certain patents, patent rights, &c., British, Foreign, and Colonial, which have been granted to or applied for by Mons. J. R. Molse in respect of an invention for improvements in obtaining and manufacturing cyanides and ferro cyanides. Registered office, Billiter House, Billiter Street, E.C.

Otto's Kopje Diamond Mines (Limited).—Registered September 10 by E. T. Hargraves, 15 St. Thomas Street, London Bridge, S.E. Capital £50,000, in £1 shares. Objects: To acquire any mines, mining rights, &c., in any of the South African colonies, dependencies or protectorates, and to develop, work, deal with, and turn to account the same in such manner as the company shall see fit. Registered office, 110 Cannon Street, E.C.

CONTRACTS OPEN:

FOR MINE, QUARRY, RAILWAY, AND ENGINEERING WORK, STORES, &c.

*** We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.*

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

Coal and Coke, September 30 (*Wimborne*).—For supply of coal and coke (broken), delivered at their schools and teachers' houses for one year, for the Kinson (U.D.) School Board. Usual quantity consumed: coal, 15 tons; coke, 30 tons. Sealed tenders to be sent to Mr. H. W. Dibben, clerk, Wimborne, by 30th inst.

Iron Bridge, September 28 (*Berlin*).—For the supply and erection of an iron bridge (about 1800 tons). Application to Herr Gier, Regierungs und Baurath, Berlin.

Iron Bridge, October 3 (*Breslau*).—For the supply and erection of the ironwork for the Rosenthal ship canal bridge. Particulars are obtainable for 1·50 marks (1s. 6d.) from the Konigliches Wasserbauamt, Lehmdamm, 70 I, Breslau.

Metal for Rolling Stock, October 1 (*Vienna*).—For the supply to the Austrian State Railways of about 500 tons sheet iron, 55 tons Martin steel, 100 tons sheet copper for fire boxes, 150 tons iron and steel boiler tubes, about 700 tons of steel axles, and a very large quantity of steel tyres, &c. Application should be made to the office of the Austian State Railways at Vienna.

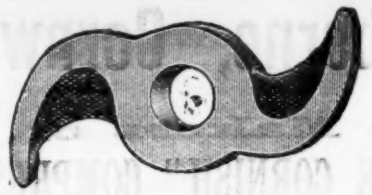
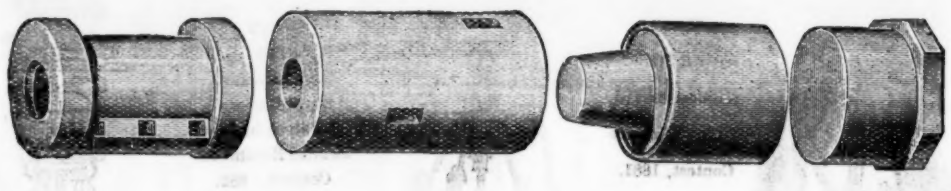
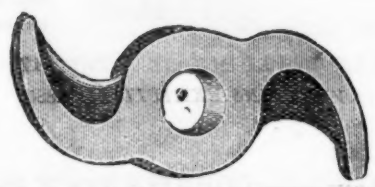
Pit Sinking (*Motherwell, Scotland*).—For sinking No. 1 pit from solint coal to Virtuwell seam. Particulars from Colliery Manager, Wishaw Coal Company, Motherwell.

Railway Lamps, October 3 (*Lisbon*).—For the supply of stores and parts in connection with lamps and lighting, for the Royal Portuguese Railway Company. Application to the Chief of the Stores Department at Santa Apolonia Station, Lisbon, and particulars also obtainable at the Paris office, rue de Châteaudun 38.

Railway Construction October 1 (*Hunslet, Leeds*).—For the works required to be undertaken in the construction of the Hunslet railways, Leeds, about four miles in length, with goods station and warehouse, for the Great Northern Railway Company. The plans, sections, and detail drawings may be seen on and after September 7, at the offices of Mr. W. B. Myers-Beswick, civil engineer, 31, Park Square, Leeds, where also copies of specification and forms of tender may be obtained.

Coal, September 29 (*Weston-super-Mare*).—For the supply of best house coal to the offices of the Council, free library, &c., for six months commencing October 1, for the Urban District Council. The description of coal, and price per ton, to be stated in the tender. Supplies, in such quantities as shall from time to time be ordered by the surveyor, to be weighed on the town weighbridge at the expense of the contractor, who will be required to sign the necessary contract.

ALGERIAN IRON ORE MINING.—The official returns relating to the production of iron ore in Algeria during 1894 have only lately been issued. The output of magnetic iron ore and manganiferous red ore from the mines of the Mokta-el-Hadid Company in the departments of Constantinople and Oran amounted respectively to 109,000 tons and 228,000 tons, a total of 337,000, as compared with 387,000 tons in 1893. The total production of iron ore in Algeria during 1894 amounted to 344,000 tons, as against 394,000 tons in 1893

STEEL FOR
CASTINGS AND FORGINGS

MINING MACHINERY

HADFIELD'S STEEL

FOUNDRY CO., LTD.
HECLA WORKS, SHEFFIELD.

NOTES FROM KALGOORLIE, WEST AUSTRALIA.

(By AN EXPERT)

TO revert again to the stamp batteries or other milling plant in the Hannan's district, reference may be made in the first place to

Lake View South Battery.

This is a 10 head battery, to be driven by a small vertical engine which has, to all appearance, no available surplus power. Each five heads has two copper plates arranged in tandem order, the tailings from which pass over blanket strips, which will retain the concentrates, and away into the catch pits. The mill has been erected for some time, but has not yet been started, owing, it is understood, to the non-arrival of the water pipes to connect with the supply from the main shaft and from the main from Hannan's Lake. Although things are getting now into ship-shape, it will apparently be yet several weeks before everything is ready for the start.

The main shaft of the mine is down 200 feet, and a crosscut has just been started at that depth to intersect the lode. The 100 feet level has been driven north about 500 feet towards the Lake View Consols Mine, whose lode they are working upon. The lode at the 100 feet is of the usual composite character, rather more shaly than in the Consols Mine or than the Boulder lode, and is believed to carry about 1 to 2 ounces of gold to the ton. There is a large heap of veinstuff lying at surface awaiting battery treatment. They do not seem to have the usual diorite rock in the deeper workings. The main shaft, which is sunk vertically in the country, is in a brown and distinctly slaty rock. A good quantity of water has been tapped by the shaft, but not yet sufficient for the 10 head battery. Recourse will have to be had, therefore, to Hannan's Lake, which has already been drawn from pretty largely by Lake View Consols and the Great Boulder. This mine adjoins Lake View Consols to the south.

Coolgardie Mint and Iron King Battery.

This is also a 10 head mill, with the copper plates and blanket strips arranged as in Lake View South. A start was made at the end of May, but for various reasons milling has not proceeded with great regularity, and but little is known of the result of the crushings; all that seems to be generally known is that one clean-up resulted in an average of 2 ounces 8 dwts. per ton being obtained.

Proceeding northwards, we next traverse the Bank of England Block, which has not the usual 24 acre area, but only about half of that amount, but it has a very fine lode, yielding exceptionally rich stone. The mine is soft, deep, but does not seem to be in course of development in a very vigorous or scientific way. It has no machinery whatever, the only mechanical contrivance being the homely windlass, with its hide bucket attached to the hemp rope.

North Boulder Mine.

We come next to the North Boulder Mine, the directors of which show their faith by their works, for they have erected a Huntingdon mill before they have a drop of water to work it.

The mill is expected to reduce about 17 tons per day. The pulp therefrom will pass over copper plates for amalgamation, precisely as in a stamp battery. A shaft is being sunk for water, but no sign of liquid element has yet been seen, though over 100 feet in depth has been penetrated. The manager is, however, confident that he will soon strike water.

Brownhill Mill.

This has been referred to in previous letters. It is now understood that one of their difficulties with this complicated plant has been got over—the difficulty of getting the crushed ore to pass freely through the shoots, and of its caking. This has been got over by drying the ore previous to crushing in a specially constructed furnace. The result has been that from two to three times the former quantity is now being put through the mill. We understand that the difficulties with the leaching of the cyanide solution have not yet been entirely overcome. It is reported that 1000 tons of the ore are to be treated by way of experiment at the Leviathan public battery.

Crœsus Mine Battery.

Still further north in the direction of Kalgoorlie is the Crœsus Mine, which has a five head battery, to which is attached a portable engine by Marshall, Sons, and Co., of Gainsborough. This battery has done but little work, and is now idle, there being no water to work it.

Mount Charlotte Mine.

This mine is very near, and lies a little to the east of Kalgoorlie. It has a Terra Secca separator. The ore is passed first through a stonebreaker, then through a Krom rolls, and next and finally through the Terra Secca machine. We do not gather that the machine is very effective in dealing with quantities of ore, but we understand that the tailings contain only 2 dwts. per ton, and is sold as a dry, clean sand to the masons at 8s. per cart load.

We have now, we believe, referred to all the batteries and mills yet completed in the Hannan's district.

Ivanhoe Crushing.

This was issued on the 7th inst. The quantity of stone put through the 5 head battery for the four weeks was 210 tons, yielding 1419 ounces 17 dwts. of smelted gold, or an average of 6 ounces 15 dwts. 5 grains per ton.

The following tabular statement has been issued:—

	Crushed. Tons.	Yield. Ozs.	Average. Ozs. dwts. grs.
Up to March 31, 1896 ..	2,426½ ..	3,841 ..	1 11 16
April 1 to July 7, 1896 ..	950 ..	2,629 ..	2 15 8
July 7 to August 4, 1896	210 ..	1,419 ..	6 15 5

Lake View Crushing.

From July 11 to 31—Stone treated, 390 tons; yield of smelted gold, 1266 ounces; average, 3 ounces 5 dwts. 17 grains.

	Crushed. Tons.	Yield. Ozs.	Average. Ozs. dwts. grs.
From November, 1894, to December, 1895.. ..	3,577 ..	10,428 ..	2 18 7
January to March, 1896..	1,221 ..	2,809 ..	2 7 12
April 1 to June 3	1,344 ..	3,733 ..	2 15 7

Lake View Consols.

	Crushed. Tons.	Yield. Ozs.	Average. Ozs. dwts. grs.
June 3 to July 31 ..	846 ..	2,774 ..	3 5 12

The above four weeks' crushing was obtained solely from the recently discovered east lode at the 100 feet level. The lode maintains its size of 10 feet, and consists of a fine-looking light-coloured schist, mixed with iron oxide and kaolin.

The Great Boulder clean up for the last fortnight reported was 847 tons, yielding 2773 ounces of bar gold, average 3 ounces 5¼ dwts. per ton. The gradual lowering of the average mill assay is no doubt to be accounted for from the fact that a larger proportion of the lower grade ground is being crushed, for the Boulder lode is not all rich shoot, and like all mines everywhere has patches of comparatively low grade ore, and it would be most unwise to be drawing all time on the high-class ore and to leave the lower grade in abeyance. This is so apparent that it needs no argument to enforce it.

July Gold Returns.

	Quantity. Ozs. dwts. grs.	Value. £ s. d.
East Coolgardie ..	9,645 13 8 ..	36,603 10 8
Coolgardie	1,799 10 17 ..	6,838 4 8
Murchison	3,133 4 18 ..	11,956 6 0
Dundas	14 0 0 ..	53 4 0
Ashburton	19 0 0 ..	72 4 0
Pilbarra	1,647 0 0 ..	6,258 12 0
Total	16,258 8 19 ..	61,782 1 4

Compared with June the return shows a considerable falling off, but this is accounted for by the fact that the Great Boulder, Lake View, and Ivanhoe clean-up on August 2 was too late to be embodied in the month's return.

OUR SOUTH AUSTRALIAN LETTER.

(FROM OUR OWN CORRESPONDENT.)

ADELAIDE, AUGUST 11.

MINING is making steady progress at the present time, and although we have had some reason to complain of the way in which South Australian capital has been expended in West Australia, the tide seems about to turn in the other direction. Several large fortunes have undoubtedly been made by Adelaide speculators in West Australian mines—quite as many by lucky speculation in shares as from the intrinsic richness of the mines. Gold mining in the West, however, has exercised an influence in a different direction, similar to that which the rich silver discoveries at Silverton and Broken Hill had 10 or 12 years ago. The geological conditions and peculiar combinations under which the metals were found have directed attention to similar conditions and combinations in our colony, and more careful search is being made here in localities believed to be auriferous. Mr. Menzie, who has been very successful in gold mining in the West, informed me that he had travelled through the principal auriferous fields in South Australia, and the result was that he intended selling out a large interest in his West Australian ventures, and embarking his capital in gold mines in this colony. To show that this was not empty talk, I may add that he has already carried out his idea, and has several other large capitalists united with him in the new ventures. Others are quietly doing the same thing on their own account, unconnected with Mr. Menzie. One effect of this movement has been the withdrawal from the London market of a rich claim of 20 acres, near Blumberg, and which was being offered for sale at £5000, as an offer of £7000 was made for it locally. The Blumberg district promises to turn out exceedingly rich, and I am glad to see by the English cable news that Mr. Heinrich has floated his celebrated Scott's Reef with a working capital of £50,000. There are many square miles of payable ground in this beautiful district, through which the little River Torrens flows, and which extends from about 20 miles east of Adelaide to the Murray Flats 50 miles from the city. Going southward we pass through the Woodside district, and about 25 or 30 miles from Blumberg strike the old Echunga diggings. A syndicate has lately purchased the Alma and Victoria Mine at Wankaringa for the purpose of extracting the gold from the large quantity of tailings—estimated at 50,000 tons—by the Christmas process, which consists in passing the tailings through molten lead, which catches the gold. We have now three important local inventions for saving gold, all of which have been proved equally effective with the cyanide process, and much cheaper to work. They are the Haycraft, the Penny-Richardson, and the Christmas, all named after the inventors.

As copper seems likely to be worth working, enterprising colonists are securing many mines that have been long idle, expecting that ere long they may be profitably worked. New discoveries are at the same time being announced in several parts of the colony, and a mining boom is anticipated.

NOTES FROM BRITISH COLUMBIA.

(FROM OUR OWN CORRESPONDENT.)

THE question of the accessibility of British Columbian mining stocks is one that will have to be settled before the British investor buys into them. At present he is dealing only in companies registered in London and floated in the way to which he is accustomed. This may be not entirely blameless, but he understands it and knows how to avoid pitfalls. Meanwhile, thousands of dollars are being made on the spot, gambling in mining shares. The method of forming a company is as follows:—A, B, C, and D, we will say, own a mining claim. They have no money to develop it, perhaps not sufficient to obtain a Crown grant. It is only a mining leasehold held by an $100 worth of work. They, therefore, form themselves into a Limited company, with a capital of (generally) $1,000,000, in $1 shares. The company, which consists only of A, B, C, and D, then buys the claims from its original holders, who are again A, B, C, and D, this time in their personal capacity paying them $250,000 each in fully-paid shares. These four men then put back (say) 50,000 shares each (reputed fully-paid) into the treasury, and these are sold to the public at all sorts of prices, from a few cents up. As counters to gamble with they are excellent. The public here understand their danger, and wise men run no risks by hanging on, but they would be dangerous things for the British public to handle. Many of the companies are incorporated in the State of Washington, and registered in British Columbia as foreign companies without the magic word "Limited" at the tail of their titles.

It is hard to say how many of these companies have come into existence in the last few months, but the shares of some 40 odd are quoted in the local papers. The mines represented by most of these $1,000,000 companies consist largely of claims containing 52 acres of land more or less with a prospect hole on them. But many of the more important mines are now becoming incorporated, and the fashion bids fair to be general. The Noble Fire and Deadman in the Slocan recently consolidated their groups of claims into a company under the title of the Noble Fire Consolidated. They placed 300,000 shares of Treasury stock on the market at 25 cents, and it was snapped up at once. Holders are now asking 40 cents. These two are valuable silver properties, largely developed, and have been shippers for some time. Another group, known as the Ruecau, is about to be incorporated. Their stock will be issued at 50 cents. This mine is one of the richest in the country. Its ore seldom contains less than 500 ounces of silver to the ton. It has shipped thousands of tons, and has large quantities in sight, and it is well and skilfully managed. Its stock will sell, as the Americans say, "like hot cakes."

Operations have already been commenced for the addition to the Hall Mines Smelter. The fall in the price of this company's stock may be probably attributed to the fact that recently they have been treating rather low grade ore, and the returns have not looked so bright as before. There is any amount of good stuff left, but it has to be taken as it comes.

MINING INDUSTRY IN POLAND.—Among the different branches of the mining industry in Poland the working of zinc occupies, after that of coal, the most important place. The working of zinc ore is exclusively concentrated in the environs of the town of Olkusz. The ore which is found in the greatest abundance is calamine, which yields from 7 to 30 per cent. zinc. Zinc blende is also found, but in smaller quantities. The ore is carried either by carts or by the Ivangrod-Dombrowa Railway to the Bendrin and Paulina works, a distance of about 25 kilometres. There are only two rolling mills in the kingdom—one at Sosnovice and the other at Slawkow. There is also a factory of oxide of zinc. A great increase in the production took place in 1895, comparing this year with 1894. The number of workpeople employed in the zinc industry in Poland amounts to 2100, of whom 1400 are engaged in the mines, and 700 in the workshops.—*Engineer and Iron Trades Advertiser*

MINING IN VICTORIA.

GOLD RETURNS.

(FROM OUR OWN CORRESPONDENT.)

THE yield of gold for the quarter ended June 30, as estimated by the Mines Department, amounted to 206,299 ounces 17 dwts. The yield for the half-year may thus be stated:—

	Ounces.	dwts.
Quarter ended March 31	206,358	7
" " June 30	206,299	17
	412,658	4

The total yield was estimated for 1895 to amount to 740,086 ounces. The half of this total would be 370,043 ounces. Therefore, making a rough approximation, an increase is shown for the first half of this year of 42,615 ounces. Hitherto the yields during the second half of the year have been generally more than those of the first half of the same year; if then 194,000 ounces be estimated to be got during each of the next two quarters, as against the actual yield as above 206,000 ounces, during each of the past two quarters a total yield for 1896 may be anticipated of close on 800,000 ounces.

The yields as returned by the Mining Registrars in the various districts for the half-year just ended are as follows:—Ararat, 12,329 ounces; Ballarat, 72,791 ounces; Beechworth, 47,431 ounces; Castlemaine, 28,414 ounces; Gippsland 49,326 ounces; Maryborough, 36,330 ounces; Bendigo, 94,154 ounces. As compared with the corresponding half of 1895, the yield for the Bendigo district is larger by 22,107 ounces. That of Gippsland is greater by 10,617 ounces; the yield for the same period of 1893 in this district was 24,565 ounces; so that the above total—49,326 ounces for the first half of 1896—is more than twice as large. Taking the first six months of the past four years for Gippsland, the record stands thus:—

	Year.	Ounces.
Six months ending June,	1893.....	24,565
" " "	1894.....	32,885
" " "	1895.....	38,709
" " "	1896.....	49,326

An increase of 3328 ounces is noted in the Beechworth district, and a smaller one in the Maryborough district. Decreases of 8150 ounces, 3379 ounces, and 2376 ounces are recorded respectively for the Ballarat, Ararat, and Castlemaine districts. Amongst the places receiving most attention may be mentioned the Walhalla and Wood's Point belt of gold-bearing country, where the yield was for the half-year 33,282 ounces, showing an increase of 7876 ounces over the return for the corresponding period of 1895. In the Rokewood and Pitfield districts 7211 ounces were obtained, as against 3974 ounces in 1895, and 2353 ounces in 1894, an augmented return in two years of 4858 ounces. Other centres of activity, as evidenced by the increased gold yield, were Omeo, Balumwaal, Bright, Mitta Mitta, Yackandandah, Avoca, Benalla, Rushworth Alexandra, and Blackwood.

The dividends paid by companies during the quarter ended June 30 last amounted to £125,214. This shows an increase of £20,846 over the amount distributed in the same period of 1895. Adding the sum paid during the quarter ended March of this year, £103,017, the total disbursement for the half-year would be £228,231, showing an amount greater by £35,063 than the sum paid during the first half of 1895. For this substantial increase Bendigo is chiefly responsible. In 1895 the dividends were £48,091, whilst for this year the total is set down at £91,288, a difference in favour of this year of £43,197. Further, it will be seen that the dividends for March quarter of this year, £48,814, were more than those for the first six months of 1895. Comparing the first half of the respective years of 1895 and 1896, increases are shown of £6393 in Gippsland and £6099 in the Maryborough district.

Decreases, however, are recorded for the Ararat, Ballarat, and Beechworth districts, Ballarat being £9032 short as compared with the corresponding period for 1895.

The number of men mining for gold in the colony on June 30 last was 31,159. Compared with the number on the same date of last year this shows an increase of 1087. In the Beechworth district there are 493 more, and in the Maryborough district an increase of 341 is shown. It is 13 years since such a large number of men worked in gold mining in Victoria. In 1892 there were only 23,327 miners, so that now, with an estimate of 31,159 at work, this is an increase of 7832. In Gippsland in 1892 there were 1487; this year there are 3249, an increase of 1762, and more than twice as many. In the Beechworth district there are 2088 more, and in the Maryborough district there has been an accession of 1618. During the period under review some large enterprises in connection with alluvial mining have been taken in hand in the hope of raising the necessary capital in London. Some 9000 acres have been applied for in connection with the different schemes, the principal places being Rutherglen, Kingston, Malmsbury, Lauriston, Ballarat, Alexandra, Glenluce, and Avoca. Each of these will require to be narrowly looked into. I have in previous articles referred to some of them, and will shortly take in hand the others. The prospects of not a few are *nil*; they have no relation to mining, and are merely eligible for London market "rigs." The principal new discoveries for the half-year have been the Victorian Mount Morgan, and on the Bemm and Snowy Rivers, and different places in Eastern Gippsland. The continued advance of the mining industry as a whole, under the present circumstances of the colony, I regard as a most striking and suggestive fact, and one destined to have considerable influence upon the interests of many centres, in particular the Gippsland district. The success which has attended systematic prospecting in this locality will have the effect to attract more and more attention to the workable value of the auriferous, argentiferous, and coal deposits of this virgin territory, in which there are already many excellent mines which may be furnished as a type of one of the most inviting speculations of the kind. It must be recollected gold made Victoria, and only gold will pull her out of the throes of her present financial misery. Her mines already occupy the proud position of being the third source of national wealth, and, doubtless, will ere long again resume the pride of place. The minister (Mr. H. Foster) and his energetic staff are to be complimented for the excellent work of accomplishing the steady progress of the industry under their control; their department is regarded on all sides as the salvation of the colony.

Geological Society of Australasia.

At the opening meeting of the session of 1896-7 of the Geological Society of Australasia, held in Melbourne last week, the mining section mustered in force to carry their candidates to the council. Of late years the society had fallen into the hands of a few dreadfully serious pedants of the mild curate order, who stood aghast at the apparent discordance with Moses, and who laboured hard with ponderous problems in support of their own particular hypotheses. Practical men left the society, but with the accession to office of a new secretary, Mr. A. S. Kenyon, Assistant Engineer in the Victorian Mines Department, new life has been whipped into the body, and at the annual elections this year the schoolmen have been badly routed. The new council now consists of as follows:—President, Mr. Jas. Stirling (Chief Assistant Government Geologist, Victoria). Vice-Presidents, Sir Jas. Hector (Government Geologist, New Zealand); Mr. T. W. Edgeworth David (Professor Geology, Sydney University); Mr. R. L. Jack (Government Geologist, Queensland); Mr. H. Y. L. Brown (Government Geologist, South Australia); Mr. R. Tait (Professor of Geology and Natural Science, University of South Australia); Mr. A. Montgomery (Government Geological Surveyor, Tasmania); Mr. R. M. Johnson (Government Statist, Tasmania); Mr. J. B. Dean (Victoria); Hon. J. S. Butters (Victoria); Hon. H. McKernan (West Australia).—Members of council, Messrs. E. J. Alexander, E. M. Cairnes, Thomas Edwards, F. E. Harris, G. Kelly, R. T. Moore, C. M. Officer, J. J. Rendle, J. Shackell, John Storer, G. Thureau (late Government Geologist and Chief Inspector of Mines, Tasmania), and Rev. W. Potter. With the exception of the last named all are members of the Institute of Mining Engineers, and entitled to add several titles to their names, which I may be excused for not giving, and which also applies to the remaining office bearers. Treasurer, Mr. Frank G. Duff; librarian, Mr. G. E. Robinson; and auditor Mr. Ebenezer Cox. In consideration of valuable services rendered the society, the Hon. J. S. Butters was elected a life fellow. The society may be congratulated on its vitality and the promise of really good work being done in the near future, who shall decide when experts differ. Three of the professional gentlemen who have reported on the Victorian Mount Morgan discovery have been elected to the Council (Messrs. Cairnes, Storer, and Thureau), and the matter was referred to at this meeting and occupied the time which should have been taken up by the Presidential address; therefore, Mr. Stirling's address on "The Present Condition of Geology and Mining in Victoria" was postponed for a month. Mr. Cairnes, in referring to the diverse expert opinions on the Victorian Mount Morgan field, submitted 100 specimens of tested auriferous granites and sandstones discovered by him. These he had every reason to believe would have a most important bearing on the future gold production of Victoria. Some of the specimens were from large dykes—notably, the Anaconda at Glen Wills. These Mr. Cairnes argued were true typical granites, being a compound of quartz, felspar, and mica, the felspar predominating and invariably carrying the gold as if deposited by volcanic or hydrothermal action; the quartz occurring in granular form, and frequently the more micaceous granite carrying the richer gold, which, he stated, disposed of the old digger's theory of—"where there is mica, there is no gold," and contended that the Anaconda dyke was either volcanic or had been fed by hydrothermal action. Although experts differed from him he clung to his theory, and with fertile reasoning applied the same problems to the Victorian Mount Morgan, contending that the latter was a huge lava dyke, or in more specific language, the Silurian sandstones there, of a brecciated character, have been permeated by hydrothermal action, depositing in solution and saturating the rocks with mineral matter, consisting of gold, silver, iron; and arsenical pyrites with manganiferous particles containing cobalt. Mr. Cairnes reminded the meeting of the difficulties encountered by the original discoverers in attempting to make known the Queensland Mount Morgan, the Broken Hill silver field, and latterly the now famous Mount Lyell Mines, instancing that the parent mine on this field could not find buyers at 1s. per share, and failed on three occasions to gain public favour. He assured them he had made 15 tests at different points from surface to 40 feet on the Victorian Mount Morgan field, and had not met with a single blank; the lowest test was ½ an ounce and the highest 2 ounces, which gave an average of 1 ounce 15 dwts. of free gold to the ton by actual crushing. In congratulating the members for electing so many consulting mining engineers to the council Mr. Cairnes expressed his belief we had only touched on the fringe of gold mining in Australia, that the future work of the Geological Society lies in combating ignorance and in getting the ordinary miner away from the idea of prospecting for quartz reefs in dykes where they do not exist, and in pointing the way to winning gold from other matrices than quartz. The President (Mr. Stirling), in returning thanks for his election, welcomed the change in the council, and hoped the members would be prepared to come forth with original papers. He considered it of paramount importance that a geological survey of Victoria should be completed in the interests of mining—the determination of the boundaries of the metalliferous and non-metalliferous areas should be proceeded with in connection with such survey, and considered it imperative that a complete microscopic and chemical examination should be made of all the auriferous and metalliferous rocks, especially close to the existing belts of auriferous country. In this work he urged the fellows to effort and a period of self-awakening to new developments in mining and the new truths in modern geological science. Messrs. Ball, Thureau, Cairnes, and Rendle were deputed to draw up a monograph for the council on the case of specimens submitted for examination by Mr. Cairnes.

BRITISH GUIANA'S GOLD INDUSTRY.

The R.M.S. *Eden*, which left Georgetown on the 20th ult., took gold to the value of $71,079·82. The shippers were:—

	Ozs.	dwts.	grs.
Colonial Bank	1252	0	0
British Guiana Bank	2737	19	15
Total	3989	19	15

The following are the returns of gold entered at the Department of Mines for the weeks ending:—

	August 15. Ozs.	dwts.	grs.		August 22. Ozs.	dwts.	grs.
Barama	63	17	5	.....	133	4	12
Barima	422	14	10	.....	251	6	5
Cuyuni	166	13	5	.....	471	15	8
Demerara ...		—		.....		—	
Essequebo ...	105	16	15	.....	713	15	22
Groete Creek ...	11	13	18	.....	51	12	6
Mazaruni ...		—		... ..		—	
Potaro	543	15	17	.....	268	14	12
Puruni	73	5	16	.....	100	8	21
				.....			
Total	1387	16	14	.....	1990	18	0

Export of gold from January 1 to September 2:—

	Ozs.	dwts.	grs.	
1896	71,738	3	21	at $1,276,290·72
1895	74,614	7	21	at $1,322,336·50

ELECTRIC LAMPS IN AN HUNGARIAN COLLIERY.—The ordinary safety lamps in use at the collieries at Sekul, Hungary, have lately been replaced by portable electric lamps made at the Bristol Accumulator Works in Vienna. The lamp gives from 1½ to 2 candle power, the current being stored in a small secondary battery connected to it. The weight of the complete set is 2 kilogs., or about 4½ lbs., while the capacity of the accumulator is sufficient to run the lamp about 10 hours.

REVIEWS.

Virgin Gold, and How to Win It. By James Holt. (M. C. Mott and Co., Moonee Ponds, Victoria.)

This little pamphlet is in many respects an interesting one. In the first place it is quite unpretentious, a characteristic that does not always mark Australian productions, and it seems to be straightforward. The author is not a mining expert or engineer, and, stranger still, does not pose as one; he states honestly and simply on his title page that he is a postmaster and storekeeper, and as such was for a considerable time at Gooley's Creek, Wood's Point. Being in a big gold-producing district he was evidently bound to be a bit of a prospector himself, and as a matter of business he had to keep himself posted up in what the prospectors and miners all round him were doing, and of this fact his pamphlet shows ample proof. He is evidently a shrewd observant man, and as such is a bit of a geologist. Any man who likes to observe quietly and steadily for 20 years or so, and then to write down plainly and straightforwardly an account of the facts he has collected, does useful work, and that is what we find in the present case. The writer has not attempted to give any account of the Victorian gold fields as a whole, but has confined himself to the district which he knows, and in so far has done most valuable work. We can only advise him in a future edition to cut out every comparison with and reference to Witwatersrand, because as soon as he attempts to go beyond the range of his personal observations, he promptly loses himself. We find his descriptions of what he himself has seen decidedly interesting, and they would assuredly be useful to British investors or proposing investors in the Wood's Point district. This pamphlet should be even of greater use to the Australian prospector for whom it is evidently primarily written, and to whom the clear straightforward style should be especially attractive, whilst its modest price (6d.) brings it within the reach of the poorest miner, no matter how hard a streak of bad luck he may have encountered.

Clemes, Courtney, and McKillop and Ellis on the Extraction of Silver, Copper, and Tin. Excerpt Minutes of Proceedings of the Institution of Civil Engineers. (Edited by James Forrest, secretary.)

It would seem as though the Institute of Civil Engineers has, after what has looked like a certain amount of cautious hesitation, finally resolved that mining and metallurgical engineering are true branches of civil engineering, and should be treated as such. The latter of the two subjects has been especially favoured, and the result is that some of the best papers on general metallurgy that have been heard in London of recent years have been read before the Institute of Civil Engineers. The method of publication, of which this pamphlet is an example, in which cognate papers are grouped and published together in pamphlet form, is a very satisfactory one. We have here three separate papers to deal with:—

I.—The Lixiviation of Silver Ores, by J. H. Clemes.

II.—Mining and Treatment of Copper Ore at Tharsis, Spain, by C. F. Courtney.

III.—Tin Smelting at Pulo Brani, Singapore, by J. McKillop and T. F. Ellis.

The first paper on the list cannot lay claim to any especial originality or novelty; the works of Stetefeldt, Engleston, and others, not to mention numerous excellent papers in the Transactions of the American Institute of Mining Engineers, have pretty well threshed the subject out. At the same time the present paper is a valuable contribution to the literature of the metallurgy of silver, because it gives a full and accurate account of the author's practice at the Yedras Mines, and institutes comparisons between it and the practice at various other Mexican works. Any description which, like this one, goes into minute details and gives costs of the various operations as obtained from actual practical results is always of value to workers on the same subject.

The second paper is of more general and sketchy nature, ranging over the history, geology, methods of mining and of treatment of the copper deposits at Tharsis. It would have been, in our opinion, better had the author confined his attention to any one of these heads instead of embracing them all. The information given seems, upon the whole, to be accurate, though we must confess that the section of the lode shown in Fig. 1 is so very extraordinary as to arouse the profoundest scepticism on the part of the mining engineer. The assays of the ores and slags quoted in the papers are, however, of decided value. Of this paper, as of the previous one, it may be said that the subjects had been so often described before as to leave little scope for originality or novelty of treatment.

The last paper of the three is the most important, not only on account of the very large part that the works described play in the world's total production of the metal referred to, but also because the entire subject of the metallurgy of tin has been so greatly neglected, and because no description at all of these particular works has ever yet appeared. Many important novelties have been introduced at these works, and the paper is especially valuable because one of the authors, Mr. J. McKillop, was their designer, constructor, and, for many years, their manager. Admitting the fact that the ores dealt with are easier to treat than Cornish ores, both on account of their physical structure and chemical composition, because they are alluvial ores, whereas in Cornwall lode ores only are available, the methods employed are undoubtedly a great advance on those in use in Cornwall. This point seems to come out most clearly in the discussion. Mr. Barnett, the well-known authority on Cornish tin smelting, seems to have little to say in defence of the Cornish method, except that the Singapore method only gets 50 per cent. more out of a furnace, and that with larger furnaces different arrangements with regard to the men would be necessary, whereas in Cornwall these men belonged to families who had been working in the same way for generations. This is a characteristic Cornish argument; to anyone else it would seem an excellent reason for changing the method. Surely we have a right to expect some improvement in metallurgy during several generations. Nor can much be said for the retention of the Cornish method of tin assay, which, like the Cornish copper assay, appears to have been ingeniously devised to discriminate in favour of the smelter to the prejudice of the miner. Some generations ago it may perhaps have been necessary to use methods of assay which closely imitated the methods of actual smelting so as to enable the smelter to form an opinion regarding the quality of metal that the ore would yield, but nowadays, when the effect upon this quality of every constituent of the ore is well-known, it is easy enough to predict what kind of metal will be produced from a simple analysis of the ore, so that the argument in favour of the more ancient process falls to the ground, and it would certainly seem more honest, as well as more scientific, to assay by methods that return the whole of the metal present. In respect of scientific practice the paper now before us represents a distinct advance, and we hope that it will receive due attention from tin smelters in this country.

MINING IN NEW ZEALAND.

MINES STATEMENT.

By the Hon. A. J. CADMAN, Minister of Mines.

IN referring to the mining industry this year it affords me great pleasure to state that the revival in gold mining, to which I drew your attention in my last annual statement, has continued, and at present shows no signs of abatement. The gold returns show a very large and gratifying increase, proving that the revival is based on very substantial grounds. One of the distinguishing features of the year has been the large influx of foreign capital for mining purposes. The results of mining operations during the past few years have clearly demonstrated that, with judicious selection, many of the large low-grade lodes, already partially developed by local capital, will prove remunerative when worked on a comprehensive scale and in a systematic manner.

The working of quartz mines and deep alluvial drifts necessitates a large outlay of money before returns can be expected, and can only be undertaken when capital is available. In the case of quartz mines, the reef must be sufficiently opened to ascertain the value and extent of the ore reserves preparatory to the erection of reduction machinery, which must be constructed on the most modern principles to insure efficiency and economy in the handling and treatment of large bodies of ore. In the successful working of alluvial drifts containing only a few grains of gold to the ton or cubic yard, a large and constant supply of water is of primary importance, and to secure this the construction of expensive races must be undertaken as the initial step towards systematic development.

It is impossible, from the nature of things, to separate speculative element from mining, but I am convinced that, if greater care and judgment were exercised in the prospecting and development of mining properties to ascertain their value before undertaking the formation of companies to work them, the industry would partake more of the nature of an investment than a mere speculation.

In the Otago, Reefton, and Nelson districts the gold in the reef generally occurs in a fairly free milling state, presenting little difficulty in its recovery. In the Hauraki gold fields, however, only a small proportion of the gold is free milling, the remainder existing in what is known as the refractory state—that is, the gold occurs in so finely divided a form that the ordinary methods of amalgamation fail to recover a satisfactory percentage, or it is associated with, or entangled in, base metallic minerals which necessitate the adoption of scientific, and often costly, methods of treatment. In these gold fields the successful use of the cyanide process is steadily extending, with the result that many ores that formerly were worked at a loss by the amalgamation process now yield regular returns on the capital invested.

In my last statement I referred to gold-bearing stone being found in a bore put down from the bottom of the Kapanga Company's shaft at Coromandel, and it is very gratifying to find that on sinking the shaft to a depth of 930 feet, to test the value of the discovery at this depth (the greatest yet reached in New Zealand), a quartz vein was discovered containing payable gold. This discovery must rank among the most important and encouraging features of the mining operations of the year. It imparts confidence in the permanency of our reefs and their valuable contents in the deeper levels, and promises a fresh lease of life to those gold fields where much of the shallower ground has become exhausted. It is also anticipated that during the coming year the testing of the deeper levels at Reefton will be undertaken with the aid of foreign capital. The prospects there are most hopeful and encouraging.

The improved appliances introduced in dredging and hydraulic sluicing machinery have made it possible to work with profit alluvial ground and drifts that a few years ago were too low grade to handle remuneratively. Extensive areas of gold-bearing drifts still exist in Otago and the west coast of the Middle Island, and when water is available to work these drifts a large number of miners will receive profitable employment. The deep leads of the West Coast are now engaging the attention of capitalists, and with systematic working and careful management promise to develop into paying concerns.

In a country so favoured with numerous never-failing streams of water, I am confident that electricity as a motive power is destined to play an important part in the advancement of the mining industry, in working dredges, rock drills, pumping machinery, and crushing batteries at places where water is not available, and the ore too low grade to pay heavy charges for transport and treatment.

Mineral Production.

The quantity of gold, silver, coal, and other minerals, including kauri gum, produced for the year ending December 31 last will be found in Table I. annexed. The total production of gold and silver was 378,515 ounces, representing a value of £1,172,943, compared with a value of £894,536 for the preceding year. This shows an increase over the value of last year of £278,307.

Of other minerals, including coal, 748,866 tons were produced, representing a value of £833,134, as against 728,594 tons, of a value of £802,706, for the previous year. The production of kauri gum was 7425 tons, valued at £418,766, as compared with 8338 tons, valued at £404,567, for 1894.

The quantities and values of the chief mineral productions for the year ending December 31 last were as follow:—

Product.	Quantity.	Value.
	Ozs	£.
Gold	293,491	1,162,164
Silver	85,024	10,679
	Tons.	
Antimony ore	54	1,486
Manganese ore	210	525
Mixed minerals	62	880
Colonial coal exported, including that used by home steamers	85,987	83,342
Coke exported	288	715
Colonial coal consumed in New Zealand	654,840	327,420
Kauri gum	7,425	418,766
Total value of production for 1895... ...		2,005,977
" " " 1894... ...		1,697,242
Total increase		£308,735

The total value of the gold, silver, coal, and other minerals, including kauri gum, exported up to the end of 1895 was £64,755,629.

Gold Mining.

The steady returns from the leading mines have directed attention to the mineral resources of the colony, and a demand has set in for New Zealand mines as an investment for foreign capital. As a natural result, large areas of new ground, and mining properties partially developed and then abandoned, have been taken up with the view of carrying on more extensive operations than formerly. Every encouragement in the matter of extended areas and security of title has been afforded to companies willing to carry on prospecting in a systematic manner; but, at the same time, safeguards have been provided to prevent large areas of mineral lands being held for purely speculation purposes. In past years many mining properties were abandoned, and often unjustly condemned as worthless, when only partially and imperfectly prospected, chiefly through an insufficiency of capital. During the present revival capital to prospect many of these properties, as well as new areas, will doubtless be forthcoming if the owners are fair and reasonable in their demands. With capital for development, and the employment of new processes of treatment, gold mining is rapidly becoming a permanent industry of great value to the colony, and the constant care of the Government will be to foster its development in every legitimate way.

The quantity of gold entered for exportation through the Customs for the year ending March 31 last, as shown in Table No. 2 annexed, was 302,690 ounces, representing a value of £1,196,081, while the quantity exported for the same period of the preceding year was 222,981 ounces, valued at £889,545. This shows the substantial increase of 79,707 ounces, not including the gold manufactured into jewellery in the colony during that period. Of the quantity exported, Auckland contributed 117,029 ounces; Marlborough, 3173 ounces; Nelson, 3813 ounces; West Coast, 89,721 ounces; and Otago, 88,954 ounces. Auckland shows the largest increase, being 58,998 ounces, or more than double the quantity produced for the previous year. Of the total quantity of gold entered for exportation last year Auckland contributed 38·67 per cent.; Marlborough, 1·04 per cent.; Nelson, 1·26 per cent.; West Coast, 29·64 per cent.; and Otago, 29·39 per cent.

Earnings of the Gold Miners.

On account of the difficulty of ascertaining the total cost of the tools, machinery, and appliances used in gold mining, it is impossible to arrive at more than an approximate estimate of the earnings of the men actually engaged in the industry. However, dividing the gold entered for exportation by the number of miners, taken from the returns forwarded to the department by the Mining Registrars, will afford, as in former years, a rude basis of computation.

The total number of miners employed last year was 13,226, as against 11,412 for the previous year. The increase was principally in the Auckland district, where 1714 more men were employed than in the preceding year. Dividing the value of gold exported by the number of men employed, we get an average earning of £87 17s. 5d. per man, as against £77 18s. 11d. per man per year for 1894—an increase of £9 18s. 6d. per man. Taking the value of the gold from the different districts, and dividing it by the number of men employed, it is found that the earnings of the miners employed in Auckland district were £122 15s. 9d.; in Marlborough, £52 5s. 8d.; in Nelson, £3 9s. 9d.; on the West Coast, £151 5s. 1d.; and in Otago £77 10s. 9d. In some places, more especially in Otago, Nelson, and the West Coast, many of the miners do not depend entirely on mining, but employ a part of their time in farming pursuit, &c.

Quartz Workings.

This important branch of the gold mining industry continues to make very steady and satisfactory progress, the returns of last year showing a very marked increase over those of the preceding year. The bulk of the increase has been from the mines in the North Island. During last year 127,572 tons of quartz and tailings were treated in the Auckland district, yielding 221,289 ounces bullion, representing an estimated value of £378,107, as against bullion to the value of £261,746 for the former year, being an increase of £116,361, or 69 per cent. increase for the year. In Nelson the number of tons of quartz and tailings crushed is not given in the battery returns, but the yield of gold for that district from quartz crushed was 225 ounces, valued at £866. On the West Coast 31,986 tons of quartz and tailings were treated for a return of 17,794 ounces of gold, valued at (approximately) £68,000; and in Otago 11,679 tons of quartz and tailings were treated for a return of 5560 ounces of gold, having an estimated value of £21,545. The total quantity of quartz and tailings treated last year was 171,237 tons, which yielded gold and bullion to the value of about £468,958, as against £358,250 for the previous year. The yield last year from the quartz workings was equal to 47 per cent. of the total value of the gold entered for exportation, compared with 40 per cent. for the preceding year.

In the Hauraki gold fields the cyanide process is now very extensively used, and it is of great interest to state that no less than 71 per cent. of the total production of the gold and bullion of those gold fields was extracted through the agency of that process. The extraction of bullion by the cyanide process last year was 52 per cent. of the total value of the bullion obtained in this district. Judging from these figures, the time is not far distant when the process will be more generally adopted at the mines in the North Island. During the past few years the cyanide process, in the hands of different metallurgists and engineers, has made rapid strides, chiefly in the designing of plants and appliances to facilitate the handling of the ore and reducing the cost of treatment. The ordinary cyanide process is not suitable for the treatment of all classes of ore, more especially that containing base metallic substances, including copper compounds; but no doubt modifications and improvements will be found to overcome the difficulty, as a result of the researches now being conducted by different metallurgists and chemists.

Coromandel.

In this district the Hauraki Mine still continues to be the chief gold producer. The monthly returns maintain a very high value, and prove the shot of gold on Legge's reef to be of great extent and exceptional richness. The Hauraki Mine alone produced more than half the yield of gold from the Coromandel gold field during the year just ended, and the rich returns from this mine have created a demand for properties in this field. A large number of mining properties have been acquired by English companies, and at the present time prospecting operations are being carried on over extensive areas of gold-bearing country. Judging from past results, it is only reasonable to expect that many valuable finds will be made as operations proceed.

One of the principal features of the operations of the past year has been the deepening of the Kapanga shaft, with the view of testing the ground at the lower levels. These operations having an important bearing on the solution of the problem of deep sinking in all parts of the Hauraki gold fields, they were aided by a small subsidy from the Government. I have much pleasure in stating that so far the results have been very satisfactory. The value to the field of the discovery of a rich vein of quartz at a depth of 930 feet can hardly be over estimated, affording, as it does, conclusive proof that gold exists at the low levels 200 feet deeper than the greatest depth reached at the Queen of Beauty shaft at the Thames, to which I shall refer presently. The results obtained at the Kapanga Mine should afford encouragement to foreign companies who have purchased mines on which capital is to be expended in deep sinking.

At Koaotunu, the Kapai-Vermont Mine has yielded payable returns throughout the year, and already several mines have been acquired by capitalists with the intention of extensive operations being undertaken. The chief drawback to this field is the scarcity of water for motive power, which makes the treatment of the ore more expensive than at the Thames.

In this district 18,034 tons of quartz and 8830 tons of tailings were treated during the year, yielding 41,253 ounces and 3534 ounces of gold respectively, representing a value of £138,897; while 1045 men were employed in the district in connection with the mines.

Thames.

During the past year there was a slight improvement in the returns from this field. Up to the present time, systematic mining operations have been restricted to a very limited area, not exceeding 700 acres altogether, and the returns of gold have been phenomenal. The Thames gold field proper is divided into two unequal portions by the great Moanataiari Fault, which forms the north-east boundary of the drainage area. The area on the seaward, or hanging wall side of the fault, comprising some 200 acres, has yielded gold to the value of £4,500,000, of which nearly one-half has been paid in dividends. The whole of this large yield was obtained from the surface down to a depth of 500 feet, below which no systematic mining has yet been undertaken. Lately a number of mines have passed into the hands of English companies, and operations on a more extensive scale, and at greater depths, will soon be initiated. The outlay of capital is fully warranted by the past results, and there is every reason to believe that large quantities of gold will be won from the deep levels. The company which has acquired the Queen of Beauty special claim has undertaken to erect machinery capable of pumping and winding to a depth of 2000 feet, and in consideration of this the company will be aided by a Government subsidy at the rate of pound for pound up to the sum of £25,000. The specifications for the pumping plant, which is to be capable of lifting 2000 gallons of water a minute from the depth to which the shaft is to be constructed, have been approved. The shaft will be a public shaft, from which other mining companies will be permitted to carry on their operations. The sinking of this shaft will prove an important factor in the development of the Thames gold field, as it will enable all the mines on the foreshore, or seaward side of the Moanataiari Fault, to conduct their operations at greater depths than formerly attained. When the Queen of Beauty shaft is clear of water to the bottom level, 748 feet deep, the adjoining mines, such as the May Queen, Saxon, Victoria, Hazelbank, and Moanataiari, will secure an additional 300 feet of backs on the existing reefs, after a drainage crosscut has been extended through the hard andesite bars in the Victoria and old Exchange leases to the bottom of the pumping shaft. As the sinking proceeds fresh areas of deep ground will be rendered available, and with the expenditure of capital and improved gold-saving appliances there should be a large increase in the gold returns from this field in a year or two.

During the past year 29,976 tons of quartz and 1497 tons of mullock were crushed, yielding 23,043 ounces of gold; and 13,519 tons of tailings yielded 2192 ounces of gold, representing an estimated value of £63,913. The number of men employed in the mines was 677.

(To be continued.)

ON THE CHOICE OF AN OIL ENGINE FOR MINING PURPOSES.

By Captain C. C. LONGRIDGE, M.I.M.E., A.I.C.E., &c.

WHERE the oil motor is mostly needed, transport and supplies are usually costly, thus lightness and oil economy are the chief desiderata in an oil engine for mining purposes. But so many motors with rival claims in these respects are in the market that it is difficult for the average buyer to make a selection. It may not, therefore, be amiss to indicate a few simple principles as a guide to the purchaser.

All oil engines agree in this that the oil, whether American, Russian petroleum, or Scotch paraffin, has to be evaporated before use, and real gasification has not, so far, been effected. In this matter the only point to be remembered is that any attempt to force vapourising by the sole action of heat will result in the chemical decomposition of the oil and the deposition of solid carbon. It follows, therefore, that to use red-hot surfaces in vapourising an oil is a mistake endangering oil decomposition and fouling. The vapouriser rather should be kept at a predetermined temperature, and vapourising effected by passing hot air through the liquid. This is the method employed by all the best makers, but their different modes of effecting this result constitute the three distinct types of engines fully discussed by Mr. D. Clerk, in his work on "The Gas and Oil Engines"—namely (1), motors in which the oil is sprayed before vapourising; (2) those in which the oil is injected into and vapourised within the cylinder; (3) those in which the oil is vapourised in a separate chamber and then introduced into the cylinder.

In the first class of motors, the whole air supply of the engine is raised to about 290° F. in a chamber heated by the exhaust gases, and into this chamber the oil is injected as a fine spray. A very perfect mingling and vapourising of the charge is thus produced. But as the entering charge is heated to this temperature while still at atmospheric pressure, it follows that upon compression the temperature rises still higher, with the result that the weight of the charge in the cylinder is reduced and the efficiency lowered. A further evil of the increased temperature is risk of premature ignition during compression. The consequent limitation of the compression pressure in this type of motor is a serious obstacle to the highest oil economy. For it is interesting to note that in the evolution of both gas and oil engines the decrease of fuel consumption has been accompanied by an increase of compression. As far as gas engines are concerned, their absolute efficiency has been raised from 16 per cent. in 1882 to 28 per cent. in 1895 through the medium of increased compression alone, the pressure having risen from 35 lbs. to 90 lbs. per square inch above atmospheric pressure. It, therefore, appears that the highest oil economy is not compatible with this spray method of vapourising.

In the second class of motors, the oil is injected into and vapourised within the cylinder. In this type of engine the combustion chamber, cut off to a certain extent from the main cylinder, is heated to nearly 800° C., a temperature sufficient for effective vapourisation and for ignition when compression is completed. To avoid the undue heating of the charge at atmospheric pressure, the air in this case is not passed through the combustion or vapourising chamber, but direct into the water-jacketted cylinder. It is then forced back from the cylinder and compressed into the combustion chamber until sufficient oxygen is supplied to the vapourised oil to procure ignition. The efficiency of these engines is not the highest, the somewhat low working pressure being apparently due to an imperfect mixing of the air charge with the oil vapour. Moreover, at light loads, the combustion chamber may become so cool that ignition fails and the engine stops; or, if the walls are so designed as to ensure the proper temperature at light loads, they are apt to become overheated at full load. Low working pressure also necessitates for given power a proportionate increase in the diameter of the cylinder and a corresponding increase in the strength and weight of the whole engine and frame, the more so as provision has to be made against the chance of a missed explosion and a double charge. Thus motors of this type are likely to be somewhat heavy, and not the most economical.

In the third class of motors, the oil is vapourised in an apparatus external to the cylinder into which the vapour is afterwards introduced. Engines of this type may be subdivided into:—

(a.) Those in which the oil is vapourised in heated tubes or passages with a small quantity of air, and is then passed into the cylinder through a separate valve. The main charge of air does not pass through the vapouriser, but enters the cylinder by another valve. The heated air and vapour thus meets and mingles with the cold air, the rising temperature of compression counteracting any tendency of the vapour to condense. By this means the charge is heated to a minimum consistent with explosion, and compression can, without danger of spontaneous ignition, be increased much beyond that in the preceding types of motors. Thus higher working pressures and greater oil economy are attained. Governing also is easy and effective.

(b.) The second subdivision comprises engines, in which the whole air charge passes through the vapouriser before entering the cylinder. This arrangement has the advantage perhaps of simplicity, but the low temperature of the air is likely to impede vapourising, and militate against economical oil consumption.

It would, therefore, seem that it is the first subdivision of the third-class of oil motors that the lightest and most economical are to be found.

MINING IN THE UNITED STATES.

American mining investments.—The supply of timber.—Spanish gold mines in Texas—Nitrate in Utah.

(FROM OUR OWN CORRESPONDENT.)

NEW YORK CITY, SEPTEMBER 8.

IN my last letter I promised to shortly supply some information as to the amount of money invested by American and foreign capitalists respectively in the purchase of American mines. The following is a first instalment. It is a partial list of the American mines that have been reported by the public Press as sold since January 1 last:—

Name of Mine.	Locality.	Price paid By Americans.	Price paid By Foreigners.
Fitzburg	Colorado	—	$750,000
Cheesbrough	Michigan	$100,000	
New Year	Montana	100,000	
Deer Trail	Washington	8,000	
Green Mountain	Arizona	60,000	
Park Queen	Montana	40,000	
Prince	New Mexico	275,000	
Searchlight	Utah	—	150,000
Viking	Utah	30,000	
Bully Hill	California	300,000	
Union	Utah	50,000	
Sheep Creek	Alaska	200,000	
Surprise	Colorado	50,000	
Yankee	Colorado	150,000	
Virginia	Minnesota	400,000	
Hercules	Colorado	150,000	
Casey	Arizona	80,000	
Washington	Arizona	70,000	
Black Dragon	Utah	8,000	
Sunny Side	Colorado	450,000	
Bunker Hill	California	8,000	
Washington	Colorado	50,000	
Crown Point	California	—	50,000
Albany	Wyoming	75,000	
Summit	California	40,000	
Mint	California	—	120,000
Little Nell	Montana	25,000	
Platt Creek	Idaho	50,000	
Mountain Chief	California	10,000	
Bunker Hill	California	30,000	
Last Hope	Colorado	35,000	
Custer	S. Dakota	75,000	
Star	Colorado	10,000	
Pegan	Montana	3,558	
Monarch	Montana	25,000	
Helena	Idaho	200,000	
Jim Blaine	Nevada	14,000	
Smith and Brainerd	Vermont	101,000	
Tulloch	California	6,000	
Florence	Idaho	10,000	
Camas	Idaho	250,000	
Last Resort	Arizona	150,000	
Camp Floyd	Utah	—	150,000
Easter Bell	Colorado	100,000	
Little Johnny	Colorado	80,000	
Niagara	Colorado	75,000	
Flagstaff	Oregon	—	20,000
Burnt River	Oregon	—	80,000
Douglas Creek	Wyoming	30,000	
Abbott	California	125,000	
Don Juan	Oregon	50,000	
Last Chance	Oregon	150,000	
Elevada	California	6,000	
Colorado City	Colorado	65,000	
Crystal Butte	Arizona	5,000	
Krohn	California	—	25,000
Good Hope	California	75,000	
Ellis Brothers	California	10,000	
Gold Eagle	Nevada	10,000	
Thorpe	California	11,000	
Mooney	California	150,000	
The Rose	California	100,000	
Davidson	California	6,000	
New Era	California	30,000	
Grande Rondo	Oregon	—	200,000
Little Giant	Idaho	100,000	
Mayflower No. 3	Montana	160,000	
Moonlight	Montana	360,000	
Esperanza	California	—	150,000
Spanish	California	20,000	
Rhodes	California	37,500	
Gold Eagle	Colorado	12,000	
Monte Cristo	Colorado	10,000	
Pungle Up	Alaska	50,000	
Klamath	California	20,000	
Whiskey Hill	California	150,000	
East Pacific	Montana	12,000	
Irish and Byrne	California	41,000	
Mormon	New Mexico	30,000	
Maximilian	California	30,000	
Hayseed	California	10,000	

The totals of the foregoing money columns show $5,799,558 invested by American purchasers, and $1,695,000 invested by British and French capitalists. It will, therefore, be seen that there is no lack of confidence in mining on this side of the Atlantic, and that our gold mines present a legitimate field of vast extent for the profitable employment of capital.

It must not be supposed that the sales I have above noted represent even the major portion of the business actually transacted this year. Very many other sales have been reported in the public Press since the 1st of January; and in the very newspapers from which I took the information here presented numerous additional purchases of mines were mentioned without the prices being set forth. Moreover, the total does not include any reference to the joint stock companies that have been formed in America during the present year for acquiring and working mining properties. These corporations are literally numbered by the thousand, and represent an actual cash capital of certainly more than $10,000,000. Altogether, it seems to me probable that American capitalists and investors have contributed upwards of $20,000,000 during the past eight months for the working of mines in the United States.

In addition to what I have here mentioned, several enterprises of very great magnitude are on foot. The famous Anaconda purchase represents a huge sum, and is about to lead to a great development of the copper industry. Messrs. W. P. Tarbutt and Edmund Davis, of your city, are said to have agreed to contribute $1,000,000 to the Crocker-Poniatowski enterprise of opening up some 30 or more hitherto undeveloped mines on the Mother lode in Calaveras County, California, and working the same by means of electric power generated at a station up in the Sierra Nevada, where an ample supply of water with a 2000 feet head is available. Your "Exploration Company," of Rothschild's fame, is credited with intending to do great things in Southern Oregon, where it has just purchased the Lucky Boy group of claims in the Blue River mining district, near Eugene City. George S. Baum, formerly superintendent of the Omaha Mine, in Nevada County, California, has been sent with a crew of Grass Valley miners to develop the property. If this report be true it is important as showing a sensible change of tactics on the part of English investors. And when once the Rothschilds have set the example of coming in on "bedrock" terms instead of waiting for other people to secure the lion's share of the profit by doing the development work and then selling at a "producing" price, it may well be hoped that the British promoter at large will be equally sagacious.

A successful experiment has just been completed which will still further reduce the cost of mining in Amador, Calaveras, and El Dorado Counties, California, and may possibly do the same thing in Australia and South Africa. Messrs. Bains and Robertson, of Stella, Washington, have managed to safely dispatch their mammoth raft of timber from that place to Oakland Creek, in the Bay of San Francisco. It was 523 feet long, 52 feet broad, and 31 feet deep, and contained 560,000 linear feet of piling, equal to 7,000,000 feet of lumber. The general shape of the structure was that of a cigar. It proved quite seaworthy, and was towed without difficulty by the Southern Pacific collier *Mineola*. The owners expect to be able to reduce the cost price of lumber in San Francisco and at the mines by at least $3 per 1000 feet; their plan being to erect sawmills on the Oakland shore, and transport the whole timber thither from the northern forests, instead of sawing up the logs on Puget Sound and sending the finished timber down in vessels. Already some enterprising men on the western coast are talking of towing a similar raft across the Pacific Ocean, seeing that the Washington timber trade some time ago stretched out to Australia and South Africa.

This week's sensational discovery is reported from Texas. Very many years ago the Spanish Jesuits and Mexicans opened a mine on a tract which is now known as the old Bowles Land, in Milam County. Tradition says the yield was enormous. The owners were, however, much harrassed by Indians, and finally had to abandon the property. Before leaving they took pains to fill the shaft completely up, and cover it with earth. For years parties have made efforts to locate this lost mine, but their labours proved fruitless, and the task was at length abandoned. Some two months ago gold ore was struck in Bell County adjoining, and this at once revived the story of the rich workings on the Bowles land. A company quietly leased the estate, and sent to Cripple Creek for an experienced prospector. A gold miner named E. L. Connaway, who has had long experience in Australia, British Columbia, California, and Colorado was engaged, and he immediately began the work of locating the old Spanish mine. From almost obliterated landmarks, he finally succeeded in ascertaining where the shaft had been sunk. The work of clearing is now in active progress, and lands in the vicinity of the Bowles tract are being taken up at high prices, because it is thought the vein extends for a considerable distance. From early settlers the story has been handed down that this mine is rich in silver as well as gold, and that there are several places in the district where the Spaniards developed rich mines, but were compelled by the constantly recurring raids of the savages to abandon them. The universally-adopted practice of filling up the shafts before leaving them is thought to show that the owners expected to return at some future time and work them. In close proximity to these mines are the famous coal mines which, for the past four years, have been turning out coal in paying quantities, most of which is shipped from Rockdale, the nearest point on the railway.

Utah is to the front again. In the Tintic district, about 5 miles south-east of the town of Goshen, a claim has been located on the strength of a find of saltpetre. Samples of the mineral when assayed show a high percentage of nitrate. Hand samples were sent some time ago to the California works. This resulted in a request being made for a £50 lot to be sent at once, together with information as to millsite, transportation facilities, &c., which would seem to indicate that the discovery is of serious importance. Hitherto, no saltpetre capable of being worked has been found in the United States, and if this Utah story proves true the effect upon the various industries of the country will be far-reaching, and more additions will be made to the numbers of our mine millionaires.

MINING ENGINEERS AT CARDIFF.

The Federated Institution of Mining Engineers commenced its seventh annual general meeting at Cardiff on Tuesday, in the Lecture Theatre of the South Wales Institute of Engineers.—Mr. G. A. MITCHELL, Newcastle, President of the Institution, occupied the chair, and there was a considerable attendance.

The report of the Council, read by Mr. WALTON BROWN (secretary), showed satisfactory progress, and mentioned that the report of the proceedings of the Flameless Explosives Committee of the North of England Institute of Mining and Mechanical Engineers had been issued.

A cordial vote of thanks was extended to the President on the proposition of Mr. J. MCMURTRIE, seconded by Mr. W. N. ATKINSON, H.M. Inspector of Mines.

The announcement was made that the newly-elected President of the Institution was Mr. Lindsay Wood, the well-known engineer and colliery proprietor of North Durham. The Vice-Presidents for the year include Sir W. T. Lewis, Bart., and Sir Lowthian Bell, Bart.

Mr. W. D. WIGHT read a paper explanatory of an anthracite coal-breaking and sizing plant at Glyncastle Colliery. He mentioned *en passant* that while the production of anthracite coal in the United States has rapidly increased, until the output in 1895 has reached the enormous total of 58,000,000 tons, South Wales anthracite deposits have been comparatively neglected, and the trade for this quality of coal has languished. Out of an approximate area of 1000 square miles in the South Wales coal field it is estimated that no less than 410 square miles contain numerous seams of anthracite coal of excellent quality and of more than average thickness. The official returns for 1895 give the total output of this coal field as 33,040,114 tons of coal, out of which anthracite amounts to only 1,761,186 tons, being the largest quantity recorded up to that date; but this is greatly disproportionate to its area. This slow development can be explained only by the circumstance that in the past the purposes to which it had been applied in this country were very limited. The use of large anthracite coal in blast furnaces has almost been abandoned, and the trade has been confined to malting and lime-burning. It is only in very recent years that anthracite colliery owners generally have awakened to the fact that it is possible to create a trade for their coal for domestic purposes, if it be supplied to the consumer in such a condition that it can be burned with facility. Stoves are now made with special appliances to meet the requirements of anthracite fuel; and for convenience and efficiency, together with economical results, this method of house-warming will compare favourably with any other. The benefits to the community, especially in great cities, arising from the use of an absolutely smokeless combustible must not be lost sight of.

Mr. MORGAN W. DAVIES (Swansea), in the course of a brief discussion which followed, said that anthracite coal was being burned in almost every variety of grate, although to those inexperienced in its use it was slow to kindle. There were large districts in which anthracite coal constituted the fuel of cottage and mansion alike, giving a bright, cheerful fire.

Mr. HORT HUXHAM said in burning anthracite coal for household purposes they must discard the old-fashioned notion of poking the fire; all that was required was to keep the bottom clear from ashes.

Mr. WIGHT having replied to the discussion, he was accorded a hearty vote of thanks, and the proceedings shortly afterwards terminated.

THE MANGANESE ORE DEPOSITS OF NORTHERN SPAIN, WITH NOTES ON SOME OTHER SOURCES OF SUPPLY.*

By JEREMIAH HEAD, M.Inst. C.E., F.C.S., &c.

IN this paper Mr. Head gave particulars of a journey made four years ago in Northern Spain.

Table No. 1 gives an approximate estimate of the cost of working at the Asturiana Mine at the time of his visit, including delivery of the mineral to a British port. The figures would apply equally to the Magenta concession. In the item for extraction the cost of exploiting and developing in barren ground is not included. On the other hand, the application of modern mining appliances and methods, and an extensive increase in the output, would be likely greatly to diminish the cost of extraction. Mining labour is plentiful at;—

For men ... ... 1s. 4½d. to 1s. 10½d. per day.
For women ... ... 8½d. to 10½d. per day.

TABLE I.

	Distance, Miles.		Cost per ton. (2240 lbs.) £ s. d.
Extraction	—	...	0 14 0
Rent of 10 pesetas per hectare per annum	—	...	0 0 3½
Government tax at 1 per cent. on value of ore at mines	—	...	0 0 2½
Administration and trade charges (say)	—	...	0 8 0
† Transport, mines (3000 feet elevation) to Covadonga (1000 feet elevation)	8	...	0 15 8
Transport, Covadonga to Rivadesella (sea level)	22	...	0 7 0
Putting f.o.b. (say)	—	...	0 2 4
Freight and charges to British port (including insurance) (say)	—	...	0 10 0
Total	—	...	2 17 6
‡ Value of 51-unit ore at 1s. 3d. per unit	—	...	3 3 9
Difference, being profit, per ton	—	...	0 6 3

From the Asturiana Mine and the adjoining Magenta concession he collected ten specimens of ore which on his return he sent to Messrs. Pattison and Stead for analysis. He requested them to mix them and give him the average of the whole. Table No. II., column 1, gives the result. Column 2 gives the approximate composition of ordinary good manganese ore, such as finds a ready market in England at about 1s. 1d. per unit now, but then at 2d. per unit more.

TABLE II.

	1. Average Analysis of Asturiana and Magenta Mines. Per cent.		2. Ordinary Manganese Ore marketable at about 1s. 1d. per unit. Per cent.
Metallic manganese (Mn)	58·35	.....	50 to 52
Metallic iron (Fe)	1·10	.....	—
Silica (SiO_2)	0·90	.....	5·0 to 9·0
Phosphorus (P)	0·01	.....	0·03 to 0·15
Copper (Cu)	trace	.....	0·05

Messrs. Pattison and Stead say in a footnote that the Asturiana samples indicate a splendid quality.

Various samples collected from the Mercurio, Maude, and Excelsior properties were sent to Messrs. Pattison and Stead on his return, with a request that they would make an average analysis. The following is their report:—

MERCURIO, MAUDE, AND EXCELSIOR MINES.

	Average of samples. Per cent.
Manganese	54·81
Iron	0·70
Silica	6·30
Phosphorus	0·04
Copper	nil

Messrs. Pattison and Stead say that these samples also indicate "splendid quality."

Mr. Head's estimate of the cost of working at the Mercurio, Maude, and Excelsior mines, and delivery of the material to a British port, at the time of his visit, was as follows (this estimate does not include any barren work which may be necessary in exploiting or developing the mines):—

	Cost per ton (2240 lbs.) £ s. d.
Extraction	0 14 0
Rent, 36 hectares at 10 pesetas per annum (£12 8s.), which on an output of 1500 tons per annum = (say)	0 0 2
Government tax, at 1 per cent. on value of ore at mines (say, £1 2s. 5d)	0 0 3
Administration and trade charges (say)	0 8 0
Transport mines (3250 feet elevation) to cable depôt (2750 feet elevation) by donkeys (say) 1½ mile at 2s. per mile	0 3 0
Transport, cable depôt to Arenas (500 feet elevation) by bullock cart 1 ton loads at 8d. per ton per mile, six miles	0 4 0
Transport, Arenas to Unquera (sea level) by bullock cart 2-ton loads, 32 miles at 4d. per ton per mile	0 10 8
Putting f.o.b. (say)	0 2 4
Freight and charges to a British port (including insurance)	0 10 0
Total	2 12 5
Value of 51-unit ore at 1s. 3d. per unit	3 3 9
Difference, being profit per ton	0 11 4

If the aerial tramways were reinstated, or a wooden shoot lined with iron plates substituted, and if the principal adits were completed so as to enable the mineral to be brought to the bullock cart depôt without the intervention of pannier donkeys, then something like 2s. 6d. per ton might be saved out of the above cost. Mr. Head assumes that the ore from these three mines (in case they are ever re-opened) will be shipped at Unquera, to which port it would be taken *via* the new road. Ships carrying 300 ton cargoes can enter and leave Unquera. There is a depth of 11 feet of water on the bar and 8 feet at the quays (presumably at high water),

* A paper read before the Iron and Steel Institute.

† When the new cart road from Covadonga to the lake is completed the fifth item—viz., 15s. 8d. for pannier transport, will be reducible by about 10s. per ton by the use of bullock carts over the first 8 miles of the route.

‡ The market value when the estimate was made. It is now about 1s 1d. per unit for high grade ore.

Small French sailing vessels, working at low freights, are the kind of craft most easy to obtain to convey the mineral thence direct to British ports. The actual loading is usually done by boys and girls with baskets. Shipping at Unquera in this way has been continuously carried on for more than 30 years.

Unquera is considered by those having local experience to be the most suitable port for shipment from the Arenas group of mines. But there are others where the facilities are, on the whole, not greatly inferior.

Rivadesella can accommodate vessels carrying from 500 to 600 tons, but it is considerably further (42 miles) from Arenas, and the road to it passes over a mountain range involving a long and somewhat steep ascent. Whereas the road to Unquera is a nearly continuous descent throughout the entire distance.

Seven miles beyond Unquera is San Vicente. This is almost as good a port as Rivadesella, ships carrying 400 tons to 500 tons being able to enter. The extra cost of road transit as compared with Unquera would be about 2s. 4d. per ton.

Llanes, when the new road *via* Hortiguera is completed, will be by far the nearest port of shipment to Arenas, but the harbour is not a good one.

The position of the manganese ore industry in Northern Spain is what it was in the autumn of 1892. Since then considerable progress has been made as regards the Asturiana deposit at the Covadonga end of the vein. About the end of 1893 Senor Labra ceded his rights to a London company, entitled "Asturiana (Limited)," who determined, by boring and sinking, to thoroughly test the quantity, quality, and value of the deposit.

On the assumption that an aerial tramway will be made forthwith to Covadonga; that an output can be obtained of 125 tons per day for 160 days per annum, or 20,000 tons per annum; that a cubic metre of rod cap, or ore-bearing material, will yield 30 per cent., or 1·4 tons of ore, and will entail the removal of not more than 3 cubic metres of overburden; and that conveyance to Rivadesella will still be done by bullock carts, Mr. Jones is of opinion that the cost price of the ore delivered to an English port may be brought down to £1 17s. 7½d. per ton, or (say) £1 per ton below my estimate, with a small output, and only primitive facilities. When the narrow gauge railway from Covadonga to Rivadesella is in working order, he thinks a further reduction of about 7s. per ton may be effected.

Taking the market value of the ore delivered at a British port at the present price of 1s. 1d. per unit, or £2 15s. 3d. per ton, for 51 units (*i.e.*, containing 51 per cent. of manganese), which is, perhaps, as much as whole cargoes can be expected to yield, it would appear that the handsome profit of 17s. 7½d. per ton may be expected under the proposed new conditions, and without the benefit of railway transit from Covadonga to Rivadesella.

Already a cargo of 200 tons has reached a British port since the Asturiana (Limited) commenced operations. This cargo actually yielded an average of 60 per cent. of manganese and 0·014 only of phosphorus. There is every probability of an early and quick development not only of their mines, but also of the adjoining concession, and possibly of those at the Arenas end of the vein. If these expectations should be justified by results, the European steel trade, as well as Spanish mining industry, will be greatly benefited.

A few words as to the competition which will have to be faced by the manganese mine owners of Northern Spain may not be without interest.

The usual sources of supply of manganese ore to the British markets are as follows:—

The Caucasus, the Levant, the French Pyrenees, Spain, Brazil, Chili, India, and Japan. It has also been found in New Zealand, Cuba, Central America, Portugal, Sardinia, Corinth, Germany, and Merionethshire, but none of these last-named sources seem so far to place any great quantity of high-class ore on the market.

Of the Cuban deposit Mr. E. J. Chibas, writing in the American *Polytechnic*, says:—"The ore is found near the south-eastern extremity of the island. Here is a range of mountains, the highest peak of which is 7670 feet above sea level, which becomes broken into a number of smaller ranges. At the summits, or on the flanks of these, the manganese ore is usually found. Sometimes it is wholly in rock, while at others it lies in pockets irregularly distributed over many acres of clay, representing the decomposition of the ore-bearing rock. The pockets are usually covered by about a foot of soil, and their number and extent are, therefore, unknown."

An average analysis of several cargoes was as follows:—

	Per cent.
Manganese	47 to 53
Silicia	4 to 9
Phosphorus	0·33 to 0·10

One particular cargo from the Gloria Mine gave as much as 55·21 per cent. of manganese.

The most extensive deposits are 12 miles from the Christo railway station. Here, with a pick and shovel, a man can extract between 3 and 4 tons of ore per day. The ore is placed in bags containing 100 lbs. each, and carried (in pairs) to the railway station on mules.

The cost delivered to Philadelphia is:—

	Per ton. £ s. d.
Extraction	0 11 3
Transport to railway	0 18 9
„ Philadelphia	1 3 6
Total	2 13 6

The circumstances in this case seem to resemble closely those of the Spanish deposits.

At the present time the Cuban mines are entirely inoperative on account of the insurrection.

With respect to the United States, manganiferous ores are found in Virginia, North Carolina, Georgia, Arkansas, Colorado, Lower California, New Mexico, Arizona, and Texas. Most of these deposits are of a low grade kind. The Carnegie Company of Pittsburgh are now the only makers of ferro manganese in America. Their consumption of ore is about 60,000 tons per annum. Delivered at Pittsburgh, 1s. 2d. to 1s. 4d. per unit can be obtained for ore containing from 40 to 50 per cent. of manganese, and not above 0·1 per cent. of phosphorus and 8 per cent. of silica.

In Canada a deposit of high grade ore, containing 95 per cent. of manganese dioxide (MnO_2) and no iron, and situated near Windsor, Nova Scotia, has been worked fitfully for the past 35 years. The cost of mining and delivery to Halifax, 150 miles distant, has been too great for commercial success, and the mine is now closed. The average annual production did not exceed 100 tons.

An exceedingly promising source of manganese ore has recently been discovered at a point 5½ miles from the port of Hillsborough, New Brunswick. This ore, which is of the variety known as "wad" or "bog" ore, has the following analysis:—

AVERAGE OF TWELVE SAMPLES DRIED AT 212°.

	Per cent.		Per cent.
Manganese (Mn) ...	45·81		
Iron (Fe)	9·95		
Sulphur (S)	0·03	Oxygen (O) ...	26·75
Phosphorus (P) ...	0·05	Oxygen (O) ...	4·26
Silica (SiO_2)	5·36		31·01
	61·20		
Add (O) as above ...	31·01		
Total	92 21		

If we assume that the only remaining ingredients are water of hydration and carbonaceous matter, this is a remarkably pure ore. It lies in a homogeneous deposit, which in places is as much as 30 feet thick. It has apparently been produced by the aqueous solution of manganiferous rocks at a higher level, and subsequent precipitation on loss of carbonic dioxide. Being in a pulverised condition, it requires forming into briquettes before smelting. Mr. Edison, of Menlo Park, New York, has recently given his attention to this matter with considerable success. On the table is a specimen of the ore in its original condition, and another of it when made into briquettes. Mr. Edison's method is to mix the ore with crude petroleum to the extent of 2 per cent., and then to consolidate with a pressure of 24 tons per square inch. Each of his machines is capable of producing 15 cwts. per hour.

Owing to the granular condition of this ore, and the fact that the deposit is within 2 inches of the surface, it can be worked with the steam navvy, thus reducing the cost of getting to a minimum. The quantity available seems to be very large, and there is little doubt it could be put f.o.b. at Hillsborough for 5s. per ton, or delivered to Pittsburgh, or a British port, in quantity, for about £1 10s. per ton, or (say) 8d. per unit. Inasmuch as Cape Breton may be had at Hillsborough for 8s. per ton, the mineral might preferably be smelted there. The Canadian Government gives at present a bounty on all pig iron or similar products smelted in the dominion from native ores. This would be an extra inducement to export the finished rather than the raw product.

As a rule, manganese ore is found in veins and pockets in rock of both igneous and sedimentary origin. The deposits are usually very irregular and unreliable. Above water level the ore is generally in the condition of black oxide (MnO_2); below it is usually carbonate ($MnCO_3$), or silicate ($MnSiO_3$). The veins have been proved to depths varying from 50 to 300 feet, the quantity and quality diminishing with the depth. The veins are not, as a rule, main fissure veins, but of a more superficial character, and filling rock joints. Iron and manganese are almost always associated, ferric oxide (Fe_2O_3) replacing manganese-dioxide (MnO_2) at the greater depths.

CORRESPONDENCE.

**** We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.*

THE STRUCTURE OF THE PYRENEES.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—A little patience with dry facts will now enable your readers to perceive the absolute necessity for reverting in geology to the healthy conceptions of its founders, and the conclusive certainty with which its recent developments may be rejected. To every man whose work lies in rocks, a reversion to simple principles has become essential, and the foundations of mining science are either in geology or in nothing.

Replying in these letters to an unprovoked refutation of my writings and to an authoritative and official announcement published in three separate transactions, supplemented by elaborate maps and sections that are promised in the next number of the *Bulletin de la Société Géologique de France* by the geologist appointed to prepare the next official map of the Pyrenees, I deal with a clear issue. The said geologist maintains that he has established along more than 50 kilometres the identity of my Lower Cretaceous slates with the Cambrian or Precambrian of the Pyrenees. Having cited, for all to verify, the abundant Cretaceous Ammonites of these slates, I am entitled to draw the conclusion that the pretended Cambrian or Precambrian of the Pyrenees is simply Cretaceous, since by declaration of my opponents it is identical with undoubted Cretaceous rocks of vast extent. It obviously follows that, from the Cretaceous to the Cambrian, the entire rocks of the Pyrenees have been mapped and classified in formations to which they do not belong, and that hence the entire current conceptions of their mutual arrangement are inverted, false, and purely imaginary. The work of the same men in the Alps is doubtless of the same character, and hence the outrageous absurdity of the current conceptions of the structure of mountain chains. The hopeless confusion which such conceptions present to the practical engineer is, like the sensational palæontology to which it leads, a mere figment of hasty speculation, and must at all costs be swept from the path of reasonable knowledge.

Taking the most central valley of the Pyrenees, the Vallée d'Aure, between Lannemezan and the culminating summit of the Mont Perdu (11,000 feet), I can briefly explain the real composition of the chain, and the manner in which it has been caricatured. The flat plateau that skirts the mountains is of Lower Cretaceous slates, abundantly penetrated by granite, and for that reason alone classed in older rocks. The first mountains are formed of an irregular crust of Upper Cretaceous limestones, which do not rise from under the outer rocks, but simply sit upon the latter. I have found sufficient characteristic fossils in both formations, and their mutual relations are in every detail clear and characteristic along the greater part of the Pyrenees. Successive synclines and anticlines of these same rocks form a series of ridges classed *a priori* as outcrops of successive formations. At the village of Rebouc it has been decided to represent the Lias. I have there found at the south end of the village an abundant series of fossils of the Plicatula shales of the Lower Greensand, a fauna which is one of the best characterised that I have found in the Pyrenees at many different places. The character of the brown soapy shales and the state of preservation of the fossils confirm the age of the formation as identical with that of the very well marked fossil species found here in abundance. The only reason for classing this rock in the Lias is the fact that these same shales *insensibly pass* to highly metamorphosed slates which (from the top of a coach) might be hastily imagined to be Silurian by people who trust to worthless first impressions. In these slates a small point of granite soon appears, undoubtedly penetrating and altering the slates. Such penetrations are clearly visible in the Lower Cretaceous throughout the Pyrenees. Wherever they appear, the present official geologists class the rocks as Cambrian or Precambrian if they find no fossils, and as Lias, Permian, &c., if fossils are clearly present. Then the microscopists of the Survey proceed to confirm the statements of their colleagues, and triumphantly announce that granite is never found penetrating Cretaceous rocks. It never seems to occur to them that the rocks visibly penetrated are invariably classed as non-Cretaceous, simply because the contrary would be heresy, exposing its author to contemptuous ridicule. But in ambiguous cases there remains another dodge. It is to declare that the penetrating rock is not granite at all. Thus the granite to the south of Rebouc has in other localities been described as a rock consisting wholly of quartz and chlorite. As a matter of fact, it is easy to select from it a square inch containing no feldspar. The adjoining square inch would contain abundant feldspar, but the microscopic section might show none. In spite of all the warnings of Zirkel, Rutley, &c., the microscope in the hands of beginners and theorists is doing endless harm to geology. By the methods thus indicated the rocks south of Rebouc have been classed for 2 miles as Cambrian since 1872. Successive geologists have copied and improved this abominable farce. Elegantly coloured bands of every formation between the Cambrian and the Cretaceous have been introduced, and this same process is repeated in every part of the Pyrenees by men who desire the credit of confirming geological lectures by pretended study of ground that in many cases they have not even seen from a coach. It is simply on this trash and on no solid fact of any kind that the easy guess that the Lourdes slates are Cambrian has been founded anew.

South of this metamorphosed Lower Cretaceous the same slates continue to form the entire base of the mountains, while the Upper Cretaceous limestones continue regularly above them in successive synclines, the anticlines being usually removed by erosion. Between the limestone and the slate there appears, however, a curious formation which throughout the Western Pyrenees has been classed as Trias or Permian. It is a breccia in which I have found many Cretaceous fossils and indeterminable plants. In the Haute Garonne it was correctly classed as Cretaceous by Leymerie, one of the few serious observers of the Pyrenees. It appears to be in great part of volcanic origin, and it constantly appears between the Cenomanien and the Aptien. Owing to its red colour it has been classed as Permian by the people I have to deal with in the Vallée d'Aure, and they have hence imagined that a sandstone, very characteristic of the base of the Cenomanien, and which here overlies the breccia, is the real Trias. Over this sandstone comes the base of the Cenomanien or Upper Cretaceous limestone. Disregarding the stratigraphy, my opponents wish to class this limestone as Carboniferous, in deference to the old idea that successive outcrops of older and older rocks must present themselves as you approach the granite of a chain. But this limestone is absolutely and peculiarly identical with the Cenomanien limestone, which in other places they have classed as Cambrian, and from which, at the same places, I have extracted such fossils as Radiolites foliaceous. It contains here a fossil which they have stated to be a *Productus* of the Carboniferous limestone. Having extracted good specimens I find them to be vaguely similar to *Productus*, but in all probability Cretaceous. The corals found beside them are equally misleading. Beside well-defined Cretaceous fossils I have extracted the same corals elsewhere. The supposed *Productus* resembles no known species, and appears to be of a different *genus*. The stratigraphical relations are, moreover, conclusive as showing that the supposed Carboniferous limestone is above the supposed Permian (which is Cretaceous). The Lower Greensand slates, all classed as Carboniferous to the south of Frechet d'Aure, continue to form the base of the mountains in the remainder of the valley. The synclines of Upper Cretaceous have been variably coloured by various men of genius. The marble of Sarrancolin has been classed as Jurassic, Neocomian, &c., because it contains nerineas of forms that I have found abundantly in the most typical Upper Greensand limestone of the Pyrenees. Other synclines of the same marble have been classed as Devonian, Silurian, &c., by people in possession of a paint box. All these synclines are precisely similar, and in precisely the same relation to the slates beneath them. Nothing but the determination to deny that these Cretaceous slates can be penetrated and utterly changed by granite, porphyry, and ophite, has originated the imaginary classification which is handed on to the microscopists in proof of their fantastic and wholly baseless classification of igneous rocks by age.

So we arrive at the head of the Vallée d'Aure, and there find that the final summits of the Pyrenees are equally composed of upper and lower Cretaceous rocks, continuing, without serious break of any kind, the structure I describe in the Vallée d'Aure. Only towards Heas and Gavarine the granite has arisen in more extensive masses among the Cretaceous rocks, and has often ramified throughout them, giving height and resistance to their masses. At the bases of the limestone synclines I have found again the Cretaceous corals that characterise all such synclines in the Pyrenees. These Cretaceous rocks, capped here by the mummulitic Eocene, form the whole Spanish slope of the Pyrenees, where comparatively feeble erosion has not yet defaced such separated bands as form the basis of the marvellous geology which I expose and denounce, while it is yet time to stop the miserable exhibitions of confident ignorance that are based on such maps as I have dealt with.

Such is the real geology of the Pyrenees, and it is simple in character and applicable to every practical purpose. Apart from details that require another letter, I would call attention to one main point. It is to the action of granite, and its effect in altering the appearance of rocks, that the current stratigraphy of mountain chains is to be traced. That action being commonly denied, and all the resources of imagination being employed to explain it away at any cost, mountain geology has become a complex pile of interlacing misrepresentations. The basis of all mining science is hence cut away, and all theories on the subject *must* contradict current geology. I am only rediscovering the facts ascertained, and in part mapped, by the authors of the old geological map of France.—Yours faithfully,

Argelès, September 7. P. W. STUART-MENTEATH.

ANTHRACITE COAL.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—It was only to be expected that some attention would be paid to anthracite coal at the annual meeting of the Federated Institution of Mining Engineers, seeing that the meeting place was Cardiff, but unfortunately the subject appears to have been dealt with somewhat wrongly. The major part of what was said was doubtless right enough, but one speaker made a mistake in maintaining that no difficulty existed in burning anthracite coal for domestic purposes. The greatest of all difficulties exists; it is difficult to ignite, and so long as the British maid of all work remains of the peculiar nature she is to-day, that objection will continue. There is also the further objection to the coal from the rival holder's point of view—that its combustion is not attended with that genial blaze to which he has for so long been accustomed. It is possible, however, that both objections could be somewhat minimised were the consumer educated up to the coal. There are thousands of people who have for one reason or another no servant difficulty to contend with, and who might perhaps use the coal on account of its low price, if they only knew the best ways of igniting the fuel, and attending to the fire when once alight. No one is more capable of giving this instruction than the anthracite colliery owners themselves, yet, so far as we know, they make no effort whatever in that direction. "There is the coal good for greenhouses, for malting and lime burning. Yes, you can use it in an ordinary stove. The price is so much per ton," fairly represents the position they adopt. An equal amount of apathy appears to rule in connection with the coal for industrial or steam-raising purposes. Why is no organised attempt made to introduce the coal into works for boiler purposes? In the Swansea district, for example, rubbly culm can be bought to-day for less than 4s. per ton, whereas small for works is from 4s. 9d. to 6s. or 7s. per ton delivered. The rubbly culm would be cleaner and a very much stronger coal for steam-raising purposes, and, if properly pushed, could not fail to secure the favourable notice of the consumer. For bunkering purposes, again, is there nothing to be done for anthracite? We are fully alive to the fact that the objection is raised that the anthracite plays havoc with fire pans, but surely some means could be adopted to overcome this. The march of science is progressing at a greater speed

now than ever, and we should imagine the difficulty attending the burning of anthracite in place of steam coal could be as easily overcome as the difficulty of telephoning from London to Berlin. In the meanwhile, the producer of anthracite must rest as satisfied as he can in the knowledge that the slow advancement of his particular coal is due to his own lethargy.

As to the extent of the deposits of anthracite coal in South Wales, it was stated by one speaker at the Cardiff meeting that out of the 1000 square miles of the South Wales coal field no less than 410 contained anthracite deposits, whilst the output for 1895, which was the largest on record, was only 1,761,186 tons, as compared with the 33,040,114 tons of the entire coal field of South Wales. Some discussion took place as to the best method of working the coal, whether by drifts or by sinking shafts, but these are matters of small moment in face of the fact that in this South Wales district there is an area of over 400 square miles of the best coal the earth contains practically idle. The cry that there is an immense future for the trade is an old one, and were the fact not so self-evident, the man in the street would be well excused in disbelieving the story altogether. As it is, that future will remain very much of a future unless the South Wales people put more energy into this branch of their business. It is to be admitted that indications are not wanting of an improvement in this direction, but a word of warning is necessary. It is well enough known that the coal trade of at least one South Wales coal port has been seriously damaged by the shipment of a "mixed" or "salad" coal. Let not the anthracite people fall into any such fatal mistake. A very dry steam coal is not an anthracite, and should not be shipped as such. This is, however, we are told, being done to a certain extent. The San Francisco market has proved an excellent one for the producers of Welsh anthracite. It rests with the Welshmen to see that the market is not spoilt.—Yours faithfully, C. W.

THE MACARTHUR-YATES PROCESS OF GOLD EXTRACTION: DRY CRUSHING WITH DIRECT AMALGAMATION AND CYANIDATION.

TO THE EDITOR OF "THE MINING JOURNAL."

DEAR SIR,—This is the title of a paper written by Mr. J. Yates for the Cardiff meeting of the Federated Institution of Mining Engineers. As its author is doubtless aware, the treatment of gold ores by direct amalgamation with cyanidation is no novelty. In 1893-94, probably much earlier, patents for this method were taken, and in the former year the process is said to have worked successfully at the Stewart Mine, Bingham, Utah. The present paper, therefore, must be regarded rather as describing a particular application or plant for this process than a newly-invented treatment. Viewed in this light, the description is open to criticism in several details. Barrel amalgamation, as described by the author, will probably not altogether commend itself to mining engineers. Mixers of the kind here proposed allow much of the solid matter to rest inert on the lower side of the rotating vessel, and to thus escape intimate contact with the solution and with the amalgamation plates. These plates, if set free on the revolving axle, are liable to assume positions which are not the best for the purpose, and to be subject to some scouring from falling or moving ore. Moreover, the centrifugal action of the solution due to rotation has a tendency to carry the fine and float gold to the sides of the barrel rather than to the plates. There is, of course, the usual loss of cyanide by decomposition when agitated by the ore. It certainly would not seem difficult to devise a more suitable apparatus than the barrel. For instance, fixed vats with stationary plates, possibly perforated, with intermittent ascending currents favouring mingling of the ore, and a partial concentration on the plates would probably better answer the purpose.

Mr. Yates makes a strong, rather over-estimated point of the saving in water, but he does not—indeed it would be difficult to—show why in this respect the MacArthur-Yates plant should be more economical than any other in which this known principle is employed. It would appear preferable also to substitute for the simple cyanide advocated by Mr. Yates the addition of chloride, bromide, or iodide of cyanogen. In such solvents the solution of the precious metals is more complete and rapid, and rapidity is of some moment. For by shortening the time required to dissolve the gold out of the ore the secondary reactions of the solvent on the other compounds of the ore, such as copper or weathered iron pyrites, are very much limited.

The system of treatment of which the MacArthur-Yates plant is one application is clearly not universal in use. The presence of copper in the condition of hydrates or carbonates would quickly saturate and spoil the solution. Nevertheless, Mr. Yates' paper is valuable, if only to draw attention to a process which, by no means new, is still far from perfect in its working details. Here mill managers have scope for introducing improvements without much danger of infringing.—Yours truly,

C. C. LONGRIDGE,
Member of the North of England Institute of Mining Engineers.

GOLD IN WEST OF ENGLAND.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—It is truly said that to build up a world-wide reputation as a mineralogist, it is necessary never to prophecy till you know. A local paper some short time since gave the authority of Mr. Christow, an assayer of eminence in this country, that he had assayed some stones which he casually picked up in the North of Cornwall, and that they gave several grains of gold to the ton. The late Mr. Hitchins, the discoverer of the Devon Great Consols Copper Mines, wrought two mines, Prince Albert and Prince Regent, in the neighbourhood of South Molton, Devon, I think in the lands of Lord Poltemore, from which he sold over £1000 worth of the precious metal from very crude and superficial working. Ancient history of Cornwall gives Carnon stream (which empties into the River Fal) as the richest in the county for tin and gold; the latter was found in considerable quantities, when in working the stream downwards towards the Fal they fell in with the Tarnondine River, which comes down through Pengreep and Perranwell. The precious metal was found to extend from the stream upwards through the river as Trewedney water." This gold evidently came from the high ground west of this point, which has since yielded in depth its millions worth of copper and tin. Again, in North-West Devon, in the parish of Broadwidger, gold has recently been found in lodes or reefs throughout a large tract of land known as the "Fernhill" estate. The cases mentioned go far to demonstrate that north of the *principal* masses of granite (including Dartmoor range) there exists an auriferous band traversing the West of England, and that sooner or later it will be turned to advantageous account.—Yours obediently, CHAS. BAWDEN.

Poldice House, St. Day, Scorrier, Cornwall.

MEETINGS OF MINING COMPANIES.

NEW JULIA NITRATE COMPANY, LIMITED.

THE statutory meeting of the shareholders in the New Julia Nitrate Company (Limited) was held at Winchester House, E.C., on Wednesday, Mr. T. N. THACKTHWAITE presiding.

The SECRETARY (Mr. F. Stobbs) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen—As you know, this is a statutory meeting, convened for the purpose of fulfilling one of the requirements of the Companies Acts, and there is no formal business to be transacted. You will, however, no doubt like to learn something of the position of the new company. When we last had the pleasure of meeting, I was on the other side of the table, as a shareholder of the Julia Taltal Company, when it was resolved to reconstruct the company, and, in conformity with the resolutions then passed, a new company has been constructed, called the New Julia Nitrate Company, and the reconstruction has been exceedingly successful. I have very great pleasure in informing you that the whole of the shares in the new company have been taken up—nearly the whole of them by shareholders in the old company—and this has been done without any cost to the new company whatever. Therefore the new company has 400,000 shares, with a liability of 2s. 6d. per share. We have received part of it already, but we shall have the 2s. 6d. per share available for the purposes of the new company. I do not think any reconstruction could possibly be conducted on more successful lines. We have already paid off the whole of the debenture debt of the company—(applause)—and we have been able to do that with the money we received on allotment—namely, 1s. per share; and we have paid other debts of the company, leaving us still a balance in hand. We have made a further call of 6d. per share, which will provide us for some time to come with working capital. At the present moment we have not spent any of that. (Hear, hear.) So soon as we found that the subscription to the new company was assured we made arrangements for sending out a new manager, and we are fortunate in finding here in England a gentleman of considerable nitrate experience, and after entering into negotiations, we were able to make an arragement with him. The gentleman's name is Mr. Charles Brooking. He was for six years the manager of the Santa Rita Nitrate Company in Tarapaca. He is also very well known to several members of your board, and is a thoroughly experienced nitrate maker. He left England on July 2, and has arrived in Valparaiso. We have had no advice of his arrival in Taltal, but I have no doubt he is there. He is not going to waste money in unnecessary cabling, but in Valparaiso he had to make certain arrangements for the purposes of the company. Amongst others he had to arrange for the appointment of agents there, and the board have taken the precaution of writing out to a firm there, Messrs. Vorwerk and Co., than whom I suppose no firm stands higher in Valparaiso, asking them to accept the agency of the New Julia Company, and I am very pleased to inform you that they have accepted the agency. I think that is a very favourable circumstance for this company, because the old Julia Taltal Company had not a very good name, and it was exceedingly desirable for the new company to associate itself with a first-class house in Valparaiso, and that we have done. As I have already informed you, we have not heard from the manager since he arrived in Taltal. We may hear from him now any day, and when we do, we shall know what he is doing and what he proposes to do. There is a great deal for him to do. I do not suppose he is making nitrate yet; I do not think he can, because the old company left us in the position that we were absolutely without stocks. We had got machinery and grounds—that is to say, we have the caliche, and I believe in great quantity, and of fair if not good quality—but we had not the means of conveying the caliche to the nitrate machinery, and until Mr. Brooking can supply himself with stocks of every description—stocks of mules, for example, for carrying caliche to the machinery—we can do nothing. All that has to be done, and I have no doubt he is now actually employed in getting everything in order. We have sent him out full written instructions, and I hope he will be able to engage the services of a gentleman thoroughly acquainted with the nitrate grounds of Taltal—a man personally known to me and to one or two other members of the board—with the object of making a thorough survey of our grounds, so that we may know exactly what we have got and how to use it, which is a very important matter. I hope that before long we shall hear from Mr. Brooking, and be able then to inform you exactly what he is doing. Mr. Brooking is thoroughly impressed with the necessity of exercising every economy, and being a practical man I have no doubt he will be able to do it. He has the knowledge, and I think your directors have the knowledge, of how to make nitrate, and I see no reason whatever why we should not be able to make nitrate, and to do so at a profit. Another very satisfactory thing I would like to inform you of is this; when the new board was constituted it was not a full board, there was a vacancy left, and we have recently elected to fill that vacancy with Mr. Alfred Quaet-faslem, who has had a very long experience of the nitrate grounds of Taltal; in fact, he was owner at one time of the greater part of what is known now as the Lautaro Nitrate Company's grounds. I am sure there is no man in London who has a greater knowledge than he has, and I think it is highly satisfactory to you that Mr. Quaet-faslem should have been willing to accept a seat on the board. (Hear, hear.) He is present to-day. We have another experienced nitrate man on the board, Mr. E. Walden Vincent, who is himself, at the present moment, a nitrate maker, and I will ask him to tell you in a few words what he thinks of the recent addition we have made to our board in the person of Mr. Quaet-faslem. I do not think there is anything more that I can tell you at the present moment, but if you wish to ask any question which I can answer, I shall be very happy to do so.

Mr. E. WALDEN VINCENT: Gentlemen—It is with the greatest pleasure that I comply with the request of our Chairman to say a few words about Mr. Quaet-faslem. It is almost unnecessary to say anything about a gentleman so well known in the nitrate world, but if any of you are not very well acquainted with the nitrate world it may be advantageous to tell you that Mr. Quaet-faslem has been some 20 years a resident in the nitrate-producing districts of Chili, principally, as our Chairman has already informed you, in Taltal. I think I shall meet the case best by saying I feel sure that our fellow shareholders will acknowledge with us that we have secured a valuable director in Mr. Quaet-faslem, who is a practical man. I am certain that he will co-operate with your board in endeavouring to carry out the object for which we were placed in the position we hold—namely, combining successful nitrate making with economy, and in the end producing those dividends which I think you all have a right to expect. (Hear, hear.)

Mr. MORRISON congratulated the directors upon the fact of their having put the Julia Nitrate company upon a proper footing.

A vote of thanks to the Chairman and directors concluded the meeting.

BENDIGO GOLD FIELDS (LIMITED).

An extraordinary general meeting of the shareholders in the Bendigo Gold Fields (Limited) was held on Monday, at Finsbury House, E.C., Mr. Percy Edwards presiding, for the purpose of confirming the resolutions passed at a previous meeting, providing for the reconstruction of the company.—The Chairman, after reading a letter from the Chairman of the company (Mr. H. C. Richards, M.P.), in which that gentleman explained the reason for his absence formally moved the confirmation of the resolutions.—Mr. Hetherington seconded the motion, and it was agreed to.—A vote of thanks to the Chairman concluded the meeting.

ZAPOPAN MINES, LIMITED.

An extraordinary general meeting of the shareholders of the Zapopan Mines (Limited) was held on Wednesday, at Winchester House, Old Broad-street, E.C., for the purpose of submitting for confirmation resolutions passed at a previous meeting, winding up the company for reconstruction.

The SECRETARY (Mr. W. M. Pigram) read the notice convening the meeting.

Mr. CHARLES RONALDSON, who presided, moved the confirmation of the following resolutions:—(1) "That it is desirable to reconstruct the company, and, that with a view thereto, the same be wound up voluntarily, and a liquidator or liquidators appointed." (2) "That the said liquidator or liquidators be, and he is or they are hereby, authorised to consent to the registration of a new company with a Memorandum and Articles of Association to be approved by him or them." (3) "That the draft agreement submitted to this meeting, and expressed to be made between this company and its liquidator or liquidatois of the one part and the said intended company of the other part be, and the same is hereby, approved, and that the liquidator or liquidators be, and he is or they are hereby, authorised and directed, pursuant to section 161 of the Companies Act, 1862, to enter into an agreement with such new company, when incorporated in the terms of the said draft, and to carry the same into effect with such (if any) modifications as he or they may think expedient or necessary." He said: Gentlemen—You have heard the notice convening the meeting read. As this is a meeting for the purpose of confirming the resolutions passed at the last meeting, it is not necessary for me to say anything at all on the matter. The particulars of the reconstruction were fully discussed at the previous meeting, when these resolutions were approved of. I can only add that the reconstruction agreement alluded to in the resolution has been at your service, and is now produced on the table to-day. With these observations, I shall move that the resolutions be hereby confirmed and approved.

The motion was seconded by Colonel HUGHES-HALLET, and carried unanimously.

Mr. L. SMART, on the invitation of the Chairman, then moved the following resolution:—"That the Chairman (Mr. Charles Ronaldson) and the secretary (Mr. Walter Marsh Pigram) be and they are hereby appointed liquidators of the company at a fee of 100 guineas."

Captain EVANS seconded the resolution, which was unanimously agreed to.

The CHAIRMAN: That closes the business of the meeting, but before I sit down I should like to call your attention to a very interesting account in the financial papers to-day. It is the interim report of the West Australian Joint Stock Trust and Finance Corporation. You will remember I mentioned at our last meeting that the territory surrounding our property had been explored by one or two of the largest corporations in the City of London. I think, if you will take the trouble to read the account in the papers to-day, you will find that what I said on that occasion has been fully confirmed. My remarks fall into insignificance in comparison with the valuable information given in that report. We have, as you know, endeavoured to express our confidence in the future prospects of this company, and if you will look at the report I have mentioned, you will find it stated that there is an auriferous belt running about 200 miles south of Palmerston. We are about 70 or 100 miles from Palmerston, in the very centre of this district. The returns from several assays mentioned are vastly in excess of anything I ventured to lay before you on the previous occasion. They are fully satisfied of the value of this land and the properties surrounding ourselves for 100 miles, and in this opinion they are more than confirmed by the Government experts who have been over the ground before them. In conclusion, I can only say that your directors will do their best to promote the interests of the company.

A SHAREHOLDER asked when the 25 acres mentioned at the last meeting were acquired, and the price paid for them.

The CHAIRMAN: They were acquired by your directors without cost to the company. They were acquired about six months ago, and we have only to pay some fees required by the Government. I do not think we could acquire property on cheaper terms.

A vote of thanks to the Chairman terminated the proceedings.

KABOONGA COMPANY (LIMITED).

An extraordinary general meeting of the Kaboonga Company (Limited) was held on Wednesday, at Winchester House, under the presidenoy of Mr. Travers, for the purpose of confirming the resolutions passed at a former meeting authorising the voluntary winding up and reconstruction of the company, and appointing Mr. H. Bridgman as liquidator.—The Chairman, in moving the necessary resolution, said the board had just received the following cable:—"Bore hole 22 feet, total to date 7 dwts., double the quantity elsewhere; very rich. Two additional bore holes right through 19 feet, 20 feet; quite satisfactory prospects. Push ahead with bottom level; we can quite easily keep the water under."—The motion was carried unanimously.

FORREST AUSTRALIAN CORPORATION (LIMITED).

The statutory meeting of the shareholders in the Forrest Australian Corporation (Limited) was held at Winchester House, E.C., on Wednesday, when Mr. H. W. Lowe, who presided, stated that the nominal capital of the company was £200,000, the first issue of which—£50,000—was privately subscribed. The object of the corporation was to negotiate for mining properties at first hand, and after developing them to float them as tried and profitable mines. Several offers had already been made to them, but many had been set aside as unsuitable. One of the properties they had secured was considered a very valuable one, and they intended to float it shortly. In regard to their future prospects, he considered that these were very good, when they observed that at present a very infinitesimal portion of Australia had been pegged out in mining claims. He hoped when they met at the next meeting the directors would be able to show that the shareholders' confidence had not been misplaced, and that the success they anticipated for the company would be fully realised.—The meeting concluded with a vote of thanks to the Chairman.

TOKATEA CONSOLS GOLD MINES (LIMITED).

The statutory meeting of the shareholders in the Tokatea Consols Gold Mines (Limited) was held on Thursday, at Winchester House, E.C., the Hon. H. A. Stanhope presiding.—The Chairman said they had but very little news to give the shareholders, but what they had was exceedingly satisfactory. The property had now been transferred to them and a reliable manager appointed. On September 10 this gentleman cabled:—"I have carefully examined the property. I consider it a most valuable property. Lode in the lower level driven 400 feet, reef varying from 2 feet to 4 feet. Appearances are favourable, good country. Lode in the upper level driven 300 feet on west side. I recommend you to continue each working. Crosscut to east and west to intersect known specimen leaders. Much pleased with prospects."—Captain Argall also addressed the shareholders, giving a very favourable opinion of the property. He believed that if the mine was worked properly good returns would be secured.—The meeting then terminated.

EUROPEAN PETROLEUM COMPANY (LIMITED).

The statutory meeting of the shareholders in the European Petroleum Company (Limited) took place on Tuesday, at Winchester House, E.C., the Marquis of Granby presiding.—The Chairman stated that since the inception of the company considerable progress had been made. Operations were in full swing at Baku, while at Galicia, in addition to the wells which were now being worked at a profit, three new ones were being sunk. On the Roumania property there was room for 1000 wells, and at present only 70 were being worked. The development of the Grosny property would be postponed for a short time on account of the large production from Baku. All the ships belonging to the company were at sea, and the refinery at Thames Haven was in process of being erected.—A vote of thanks to the Chairman concluded the meeting.

MAORI DREAM GOLD MINES (LIMITED).

The statutory meeting of the shareholders in the Maori Dream Gold Mines (Limited) took place at the offices, 8, Old Jewry, E.C., on Tuesday, when the Earl of Kilmorey, K.P., who presided, stated that the company was incorporated on May 16, and an issue of 70,000 shares was offered to the public in July, with the result that 40,000 were allotted. The mine manager, under date August 7, reported very favourably on the property, and the result of an assay of the ore gave 237 ounces 6 dwts. of bullion per ton, or 155 ounces 18 dwts. of gold and 71 ounces 8 dwts. of silver. On September 11 Mr. Barcher, the company's legal agent in New Zealand, cabled as follows:—"General results of my inspection are very satisfactory. The result of average sample is £10 4s. 6d. per ton. Mine promises exceedingly well for the future. Operations have proved entirely successful. A new reef has been found; assay results very satisfactory."—A vote of thanks to the Chairman terminated the proceedings.

HIGHLAND CHIEF GOLD MINES (LIMITED).

The statutory meeting of the shareholders in the Highland Chief Gold Mines (Limited) was held on Tuesday, at Winchester House, E.C., when the Chairman (Major S. Flood Page) stated that the property, which consisted of three gold mining areas, was situated in the Gippsland district of Victoria, where mining had for a long time past being looked upon more as an industry than a speculation. Before the mines were purchased they were very favourably reported upon by the Government Geologist and the director of the School of Mines at Bairnsdale. A very competent engineer had been engaged on the spot, and the question of providing the necessary plant to develop the mine was now being considered. There was an abundance of water and timber. Referring to the prospectus, the Chairman said all the statements made therein had so far been confirmed. By cable they were informed that a new vein had been cut on the Highland Chief South, and that in the Highland Chief itself the ore in the 65 feet level was the richest yet found. Under these circumstances the directors had no hesitation in saying that they considered the result of the working of the property would be a very substantial profit.—A vote of thanks to the Chairman concluded the meeting.

MACATE MINING COMPANY (LIMITED).

The ordinary general meeting of the members of the Macate Mining Company (Limited) was held on Tuesday, at Winchester House, E.C., when the Chairman (Mr. T. B. Miller), in moving the adoption of the report, referred to the disappointing results which had so far attended the development of the property, and said the shareholders would have to decide that day whether they would find more money in order to keep the mine going, or whether any farther outlay was warranted.—Mr. E. Sloper seconded the resolution, and it was carried.—Subsequently an extraordinary general meeting was held, when resolutions providing for a reconstruction scheme were submitted.—Messrs. Buckmaster and Orange, both of whom knew the property, having addressed the meeting, and expressed the opinion that the mine could be worked at a profit, the resolutions were put to the meeting and carried.—The meeting concluded with a vote of thanks to the Chairman.

AROHA GOLD MINES (LIMITED).

The statutory meeting of the shareholders in the Aroha Gold Mines (Limited) was held yesterday, at the Cannon-street Hotel, Sir Westley Perceval, K.C.M.G., presiding.—The Chairman stated that the property comprised 290 acres, and was situated in the Te Aroha district. Formerly it was worked by individual miners, who were compelled to give it up on account of the want of capital. Out of a total crushing of 49,000 tons of ore 50,000 ounces of gold were obtained, and it was calculated that in consequence of the unsuitable crushing plants used quite half of the gold contents was lost. Operations had been recently carried on to find out whether the rich ground, which was found in the surface workings, existed in the lower levels, and it was gratifying to know that such had been proved to be the case. The main reef ran right through the property. It was 2½ miles in length, and varied in thickness from 4 feet to over 100 feet. Therefore they had got an enormous quantity of low grade ore. A tunnel was being driven from the south end of the property, by which means they would be able to cart the ore to the battery at a much reduced cost. Samples of the ore were now being tested for the purpose of ascertaining the most effectual way in which it could be treated. The Chairman concluded by reading extracts from the reports of Mr. E. J. Dunn, who had visited the property, and was very favourably impressed with the prospects of the mine.—The meeting then terminated.

LEFROY GOLD FIELD, TASMANIA.

By A. MONTGOMERY, Government Geologist.

It is intended to prepare a general topographical plan of the district, showing the shape of the surface, the position of the various lines of lodes, and the location of the various mining leases and the workings upon them. About one-fourth of this map, showing the south-western quarter of the field, is all but completed, and the remainder is partly plotted. There will also be plans and sections of the workings on the various lodes to as large a scale as is conveniently practicable. Those of the mines on the Chum, Pinafore, Morning Star, Land o'Cakes, and Volunteer lines of reef are partly drawn, and could be completed without much further work. The plans of the mines furnished annually to the office of Inspector of Mines have been used as much as possible in compiling these maps, but a good deal of actual surveying has in some cases to be done to connect them and to supply deficiencies. It is considered that the publication of fairly complete plans of the workings of the mines would be of great service to all investors interested in the field, and especially to those outside the colony who might wish for full information.

Special attention will be given to mapping the system of "deep leads" which traverse the field, and to getting together such facts as will be useful in determining whether there is any likelihood of it being possible to work them profitably for alluvial gold. At this stage it may be said that so far as the examination of the field has gone, there seems considerable probability that some of the sub-basaltic "leads" will be payable, but that there will be a serious difficulty to contend with at the outset in the water in these old channels, as some of them lie below sea-level. Once the water accumulated in the "leads" is pumped out, it is not likely that the ordinary influx will be at all formidable.

As soon as circumstances will permit it is now my intention to complete the typographical survey and examination of the underground workings, next to complete the maps, then, finally, to revisit the field for the purpose of getting any fresh information brought to light in the interim, and to finish the report. This will require about three months' undivided attention.

Though the examination of the district is yet very incomplete, it may be of service to make known one or two of the conclusions already come to, especially bearing upon the question of the lodes carrying gold in depth. In every instance hitherto the gold-bearing stone found near the surface has, sooner or later, been lost at depths from 300 to 500 feet, and the lowest levels on the reefs have been unprofitable, from which has arisen a belief, strongly held by many investors, that it is no use expecting to get gold below a comparatively shallow depth. This pernicious notion has retarded the progress of the district very considerably, destroying confidence in the minds of investors, and preventing them from going into the deep-sinking operations, which would otherwise have been boldly and energetically entered upon. The sections of the workings that have been prepared show very strikingly the very small foundation upon which the belief rests, for in all cases where the shafts have been sunk into the supposed barren parts of the lodes it is seen that the amount of exploration work that has been done has been so little as to be quite inadequate to allow of the proper testing of them. Granting that in these lower levels the lodes have been poor, there is, nevertheless, so little done that a wholesale condemnation of them is very premature. And even if it should become established that there is a barren zone in the reefs, say below 400 feet, experience elsewhere, in Victoria for example, gives us support in believing that at some lower depth they will again carry gold. In the case of the Lefroy reefs there are certain considerations now to be mentioned which supply somewhat probable reasons for an alteration of auriferous and barren zones in them.

The reefs, with a few exceptions, belong to a group of nearly parallel lode fissures running about north 75° east., and usually underlaying to the southward; there are also a number which run more or less north and south, but these have hitherto been barren, and it seems probable that they belong to quite a different system of fractures from those which have formed the auriferous group; the latter were originally fault fissures, dislocating the strata traversed, so that at any given point we usually find that the country on the hanging wall does not correspond exactly with that on the foot wall. In most of the mines we find proof that after the lode channels had been filled, or partly filled, with more or less auriferous quartz, which would no doubt present the usual phenomena of richer chutes and poorer intermediate portions, further motions of the wall rocks have taken place, striating and smoothing the surfaces of the quartz sheets already formed, crushing them at times to rubble, and in places tearing them altogether asunder. The large slickensides seen in the Volunteer reef show this action particularly well, and in the mullocky portions fragments of slickensided auriferous quartz have at times been found, showing that the original main sheet of quartz had been torn asunder. The occurrence of "splices" of barren quartz lying alongside rich stone, which have often been noticed, would probably be due to the same cause, the barren stone being formed at a later date, subsequent to the movement which had smoothed and striated the surface of the auriferous portion. The wide mullocky portions of the lodes, so common throughout the field, would also probably be due to the repeated faulting movements along the planes of weakness afforded by the reefs.

The effect of faulting movements along the planes of reefs must necessarily be frequently complete disruption of the previously formed sheets of quartz, and the distance to which parts of the sheets formerly in contact would be separated would depend on the amount of downthrow of the faults. We should, therefore, expect to find blank spaces in the reefs where the auriferous quartz sheet has been more or less torn apart, leaving only mullock in its place, or possibly non-auriferous quartz of a later period of formation. Below these spaces we should again come upon the stone that has been torn away from them. This explanation is rather strikingly supported by the experience of the Volunteer Mine. In this there was good quartz above No. 1 level and again below No. 3, but comparatively little between, though there were some very curious detached patches. No. 2 level showed hardly any payable stone from end to end, but was mostly in mullock. If we fold the longitudinal section of the mine, showing the stoping done so that No. 3 level is superimposed upon No. 1, it will be seen that the shoot of gold worked becomes practically continuous, and it seems probable that really good stone below No. 3 level was once continuous with that above No. 1. Below No. 5 level there has been another blank in the lode, which may be due to another rupture of the original continuous auriferous sheet, which would then be found at some lower level.

It has sometimes been supposed that the loss of the gold in the Lefroy reefs in going downwards might be due to their passing out of a group of favourable strata into underlying unfavourable beds, as it has often been noticed on many fields that the character of the enclosing country appears to influence the value of lodes. In support of this theory it has been pointed out that the strata in Lefroy lie at flat angles. In making the geological survey special attention has been given to this question with the result that there does not appear to be any connection between the shoots of gold and the country enclosing them. The strata are not lying at very flat angles, after all, but dip at about 15° to 20° on the average, and the planes at which the gold appears to have died out in the reefs do not correspond with the bedding-planes of the country. Furthermore, it appears likely that certain strata which have enclosed gold-bearing portions of one reef in one mine have not carried auriferous quartz in an adjoining reef in the next mine.

The conclusion arrived at after studying the Lefroy reefs is that there is no reason to think that gold will not be found in them to any depth to which they may be followed, though probably in more or less detached patches, owing to disruption of the auriferous sheets by faulting. There is certainly not sufficient evidence of the gold dying out in depth to warrant the idea that sinking is useless; on the contrary, there is much inducement to put down deep shafts in the confident belief that they will be remunerative.

Seeing that a large number of parallel reefs, some 15 or more, have been discovered in the district, and that much of the surface is so covered with alluvial matter as to make prospecting a matter of difficulty, systematic crosscutting on lines running north and south is much to be recommended. When deep sinking operations are commenced it will be desirable to amalgamate as many adjacent properties as can be conveniently worked from each main shaft, so as to save expense, and it will be necessary to do a good deal of crosscutting to connect the workings on adjacent lines of reef. Should three or four deep main shafts be sunk it would not be a very heavy work to connect them right across the field by a system of crosscuts, and in opening out from each it would be well to preserve as much as possible corresponding levels in adjacent mines to permit of connections being made. Probably systematic cross-cutting in this way would result in the discovery of reefs yet unknown. Ventilation and drainage would also be much facilitated.

The production of gold from the Lefroy reefs compares favourably with that from other known fields, having regard to the amount of ground laid open on the lodes by mining works, and I have much confidence that future exploitation will result quite as well on the average as that in the past. The field presents very good opportunities for the investment of capitals in legitimate mining ventures.—*Australian Mining Standard.*

DIARY.

Monday, September 21.

Argentine Concessions, Cannon Street Hotel, 12.
Thistle Consolidated Mines, Cannon Street Hotel, 12.
Hannan's North Crosses Gold Mining Company, Win. Ho., 12.
Bayley's Reward Claim, Melbourne, 3.

Tuesday, September 22.

New Australian Broken Hill Consols, Winchester House, 11.30.
Albion Transvaal Gold Mines, Winchester House, 12.
Tin Ticketing, Tabb's Hotel, Redruth, 1.

Wednesday, September 23.

Niekerk (Klerksdorp) Gold Mining Co., Winchester House, 12.
Prospectors' Association, Winchester House, 12.

Thursday, September 24.

North and East Coolgardie Development Synd., Win. Ho., 12.
Band Central Electric Works, Winchester House, 12.
Maori Gold Mine, Winchester House, 2.
Great Boulder No. 1, Winchester House, 2.
Hannan's Virginia Gold Mining Co., Cannon Street Ho., 3·30.
Simmer and Jack East, Johannesburg.
Knight's Deep, Johannesburg.

Friday, September 25.

Glen Deep, Johannesburg.
Langlaagte Deep, Johannesburg.

NEWS FROM WESTERN AUSTRALIA.

CUTTINGS FROM THE LOCAL PRESS.

(From the *Gold Fields Courier.*)

THINGS in mining circles at Mount Margaret are looking very well, and miners are very scarce. Prospecting is being carried on for a distance of about 14 miles along the same line of reef as the Golden Cliff, which latter property is being vigorously opened up by Mr. Fitzgerald Moore's Company. A number of other good claims are being privately worked, on some of which good gold has been struck. The West Australian Gold Fields Company have acquired properties on the same line, and are pushing on work. On the Pride of Mount Margaret, a property lately taken over, work is being pushed on as quickly as possible, and some splendid gold has been struck. It is expected to turn out a very rich mine. It is reported that a strike has occurred amongst the miners working on the Mount Margaret Reward claim, the men giving as their reason for this step that they ought to be paid £4 10s. weekly when working in a wet shaft, in lieu of £4, as at present; and that they should be obliged to work no more than 44 hours per week, instead of 47 as at present. They state that the other mines in the district are working the latter hours, and that it is only fair that they should receive the same concession. Captain Paul, the manager of the claim, having refused the demand, about 20 men have left the mine. As there appears to be plenty of work on the new finds being opened up in the neighbourhood, the men say they will have no difficulty whatever in getting work again.

Cockshott shaft on the Bayley's Reward leases, in the vicinity of which the recent find was made, was sunk some considerable time ago. They only commenced to open out at the 100 feet level, however, between two and three months since, and in driving north along the reef some promising stone was very soon come upon. Some six weeks ago, again, after about 40 feet some very rich ore was found, and, finally, some days since, at a distance of 60 feet from the shaft, the rich cluster already described, and the richness of which, we may say after inspection, by the kind permission of the manager, Mr. J. V. Brown, has not been in the least exaggerated. Indeed, it would not be easy to describe the stone in more glowing terms than it deserves. What is of more importance yet is the fact that it seems certain now, from the manner in which the lode is set, that the rich chute will continue. It is highly satisfactory to find the stone growing richer as the drive has proceeded. Operations are suspended at present pending the completion of the amalgamation scheme.

In the course of a speech at Geraldton, Mr. Wittenoom, the Minister for Mines, made some remarks concerning the Coolgardie water scheme, in answer to questions from several members of the local Chamber of Commerce. Mr. Wittenoom said that £2,500,000 would be sufficient to complete the work, which would, he declared, be self supporting. The retail price of the water was estimated at 3s. 6d. per 1000 gallons, and this price would pay working expenses and interest, and provide a sinking fund whereby the money would be paid back in 20 years. Some people, Mr. Wittenoom said, did not favour the scheme, and suggested that the Government should bore for water. It would, however, take three or four years before they could get a bore down 3000 feet, and it would be all chance then whether they got any water at all. If something were not done, English investors would stop sending their money out.

Mr. W. H. Martin, a well-known South Australian man, who was brought out under engagement to the Burra Company in 1851, and has been a gold digger on the Victorian fields since 1854, after seeing all the principal fields in the west, is of opinion that Menzies is going to be one of the best. The deeper the shafts go down the richer the mines become. He instanced the Lady Shenton, which when down some 70 feet did not encourage further working, but after that depth the reef made again, and now at about 200 feet he saw stone which hung together with gold. The manager told him that there was enough stone on the surface to pay for all machinery and for all past expenses, and Mr. Martin believed it. Three miles south of the Lady Shenton is the old Sugary Blow, which was sold to a London company for £30,000. It is now valued at half a million. The Wallaroo Menzies and the Wallaroo Extended are both on the same line of reef, running pretty nearly north and south. Mr. Martin has been appointed manager of the Wallaroo Menzies, and his directors are negotiating for machinery which the manager came over to advise upon.

At Lindsay's Extended, the lode formation which was recently mentioned has proved to be 3 feet thick, averaging 2 ounces of gold to the ton. Other lode formations on this property are now being prospected.

The 10 stamp mill erected at the Crown United Gold Mine, Black Flag, is to be started to-day (August 8) at 2 o'clock. Messrs. Cooper and Woodhouse, the managing engineers, are arranging a ceremony to mark the event.

The tailings from the crushing of 2 tons of stone brought in from the Golden Crescent Mine, Black Flag, by Mr. P. K. N. Crozier, were assayed by Messrs. Graves Gifford and Co., the result being 10 dwts. 10 grains. The bulk sample crushed at Bayley's battery yielded 3 ounces 2½ dwts. per ton, so that the total result is now brought up to nearly 3¾ ounces per ton.

(From the West Australian *Mining Journal.*)

Some days since Mr. H. W. Mills and Mr. E. W. Young, the well-known engineer, returned from a visit to Mount Magnet, which was made in the interests of the Mount Magnet Proprietary Company. This company was formed to purchase several leases held under option by Mr. Mills, and Mr. Young was deputed to visit the properties in order to procure samples of the ore for the purpose of assay, and in such a way that there should be no question of the independent character of such a test. Mr. Young returned on Friday last with samples from all parts of the different leases, and these were handed to Mr. Dougall for assay. The results of Mr. Dougall's tests have now been made public, and they are, to say the least of it, sensational. The samples from what is known as the O.K. claim were particularly interesting, returning very rich results from every one, these results ranging from 17 ounces to 243 ounces per ton. The latter enormous result was the assay of the stone obtained from the greatest depth worked on the leases, namely, 60 feet, and is therefore beyond being classed as a mere surface show.

An important discovery is reported from the Southern Cross, consisting of a 50 feet formation showing good gold. Several areas have been taken up.

A rich patch of gold has been met with in the Bardoc Mine, formerly known as the Bank of England. The find was made at the 80 feet level, and 70 ounces were secured in a few minutes, one piece weighing 15 ounces.

The average crushings of the big Kalgoorlie Mines have been: Great Boulder, over 4 ounces; Lake View, a little under 3 ounces; and the Ivanhoe, 1 ounce 18 dwts. per ton.

The result of the Maori crushing at Menzies was 200 ounces of gold from 63 tons of stone. A lot of fine gold is supposed to have been lost through the density of the water used.

OUR SOUTH AFRICAN LETTER.

(FROM OUR OWN CORRESPONDENT.)

JOHANNESBURG, AUGUST 30.

THE Bewaarplaatsen question has been settled, or better speaking, unsettled, by the decision of the Volksraad of the 25th inst., when, by 14 votes to 12, it carried Mr. A. D. Walmarans' motion.—"That the prohibition clause of the old Gold Law be enforced again, and should it be deemed advisable in the future to dispose of the undermining ground rights, such rights shall be sold by public auction, and the proceeds be divided between the State and the original owner."

This legislation, which by a retroactive principle is contrary to all principles of law, is an open contradiction to the dispositive of Law 14 of 1894, which granted preferential rights for three months to the Bewaarplaatsen holders, of the mineral rights under their surface claims, in case of such rights being disposed of.

It may be expected that the companies interested in the matter will take such steps as to secure their rights. Objection will certainly be raised to the Volksraad besluit, also on the ground that they have exceeded their legislative powers, encroaching into the attributions of the Second Raad.

Solicitors are going to have a good time of it, and the general meeting of the Henry Nourse Gold Mining Company came just *apropos* to hear what one of the interested parties have got to say in the matter. The Chairman, Mr. Baumann, in referring to the Volksraad decision, pointed out that their legal position was a very strong one, and that they were perfectly in accordance with the provision of the 1894 Law.

In Europe such a resolution of the Raad will meet with a very sharp criticism, and I am aware that some doubts will also be raised if the Bewaarplaatsen, of which last year had been obtained the beyitrecht, were available titles or not to those claims.

With reference again to the annual meeting of the Henry Nourse Gold Mining Company, it may be said that, according to the report, the prospects of the company are exceedingly bright.

All the liabilities had been paid off, they had a credit in hand, the mine was perfectly equipped, and they had a very large ore reserve.

The profit made during the year was over £70,000, which had been devoted to the complete equipment of the mine.

The milling power had been increased from 40 to 60 stamps.

It is worth noticing the constant reduction of working costs, which, during the year ending June, 1894, amounted to 54s. 11d. For the year ending June, 1895, they had been 51s. 4d., whilst for the year ending June, 1896, they had been further reduced to 39s. 3d. The directors must be complimented upon their policy of concentration which has enabled them to go through their financial difficulties, and to proceed in overcoming them above all possible expectations.

The Ryan Nigel Gold Mining Company held their first annual meeting on Friday afternoon last. We may state that till now very little good has been reported. A lot of sinking and driving has been done. The reef looked well, but the assays were all but satisfactory. Now no work is being done, and the mine is closed down. This has especially resulted on the difficulty of obtaining transport for coal. A strict economy has been carried through all round, and better times will come.

At a meeting of the Jumpers Deep (Limited), it was resolved to ratify the provisional arrangement entered into by the directors of this company to sell to the Jupiter Gold Mining Company 20 claims, in consideration of 24,904 shares (£1 fully-paid), the right to subscribe at par 19,924 shares, and a proportionate right in any issue of reserve shares of the Jupiter.

The native wages question is approaching its settlement. At the meeting of mine managers held yesterday, the following resolutions were passed, and it is expected they will, at the appointed time, be enforced.

The hours of actual labours for the natives be nine hours per day.

Each boy to have an allowance of 2½ lbs. of mealie meal per day, such quantity to be the maximum.

Meat to be allowed to the extent of 2 lbs. per week.

The natives in each mine to receive notice through their compound manager at 6.30 a.m., on the 1st of September, that the reduction will come into force on the 1st of October, 1896.

It is not expected that the boys will leave the work, as the action being concerted jointly by the mines, they would have no better chances by looking to get higher wages elsewhere.

Of transactions in mining properties there is very little to be said; from Heidelberg it is reported that drilling is going on eagerly on Noycedale, both on the proclaimed and unproclaimed portions. It seems that results already obtained tend to prove that the Nigel reef is running through, but more proofs are still wanted.

The correspondent from Heidelberg, of the *Standard and Diggers' News*, reports that Reuter Block on Daasport, consisting of 196 claims, was taken by Mr. Bauer, of Johannesburg, for flotation on a six months' option of £500 cash on flotation, and £35 a claim cash and 175 shares.

The reef, it is said, was struck at a depth of 150 feet, 3 feet wide, and very rich.

Claims in this district, which some time ago were offered at very high prices, are now to be had at very reasonable terms, holders being compelled to reduce their exaggerated demands, owing to the result of much development work having been kept unknown by the claim holders.

From Potchefstroom I hear that the farm Roland has been sold on Friday last for the sum of £7500. Things in general on the Vaal river are not particularly bright, notwithstanding reports on the contrary; claims are offered at very low figures. On Rooderand, developing works are going on most active, and the results are said to be fairly satisfactory.

On Zygerfontein prospecting work is being carried on, and the quality of the reef marks a certain improvement.

Coal prospecting is being carried on actively between this farm and Potchefstroom.

An influential syndicate have acquired large blocks of claims on Cyferfontein and Katdoornbosch. The head office of the syndicate is in Capetown. I hear that upon the favourable report by a well-known reporting engineer it has been decided to start, without delay, active development on their property.

I am also informed that a strong copper lode which is known to exist at a short distance from Potchefstroom, has been assayed, giving very good results. The ore has been found to contain a percentage of uranium phosphate, which should develop fairly well.

From Barberton I am informed that a lot of prospecting is still pursued by the Raapsche Hoop; the quality of the reef has been found partially good, but the particulars are not yet to hand.

The WEST AUSTRALIAN GOLD CONCESSIONS (LIMITED) announce that dividend warrants were posted on September 14

GOLD MINING IN BRITISH COLUMBIA.

THE TRAIL CREEK MINING DISTRICT.

THE following is from the report of Mr. William A. Carlyle, Provincial Mineralogist to the Hon. Col. James Baker, Minister of Mines, British Columbia:—

In presenting my report on the Trail Creek mining district, West Kootenay, I first wish to acknowledge my keen appreciation of the invariable courtesy and assistance tendered me by the mine owners, mine managers, and the other gentlemen connected with this industry, who spared no pains in giving me all access to their properties, and all information relating to the history and conditions of the mines, and the exact amount of the output of ore to date. In this report it will be necessary to go over much ground quite familiar to those conversant with the district, but many of these details may be of service and interest to those outside whose attention has been directed to the fast developing mineral resources of this province, while it is desirable that as much information as possible be placed on record in the reports of the Bureau of Mines, that may be supplemented from time to time as work steadily progresses, without undue repetition. The work it is proposed to be undertaken by this Bureau is rendered much more difficult by the great area of this province, and also by the fact that it will be in great part the pioneer endeavour to investigate and record officially the greatly differing conditions that obtain in the many new mining camps that are now being founded. Excellent work has been and is being done in the West by the Geological Survey of Canada, but this work is only fairly begun, and it is to be hoped that Dr. Dawson, whose labours have been of such signal value in the West, will be able to extend at once the operations of his department in British Columbia, especially in this district, as the inestimable value of a thorough geological survey of a country in which ore deposits are to be found has been well established by the results obtained in the Western States of America, where these surveys have proved most useful and beneficial in a strictly practical sense, not only to scientific men, but to the prospectors and explorers who have thus been guided.

Perhaps the greatest factor that will determine the progress of mining and the realisation of the wealth that undoubtedly is now locked up in these mountains, is the means of communication and transport. The ores must be carried to the metallurgical centres for treatment, and if the ore deposits now known to exist, and those that may yet be discovered, are to be made available and to become a most valuable part of our resources, trails, roads, and railroads must be constructed to make possible the concentration of ores, fuels, and supplies at the most favourable points; and if this part of the industry is to be retained in Canada, Canada must assist in boldly advancing these means of communication to make easily accessible the coal fields and the mines from which the different classes of ore can be obtained, that separately are difficult to treat, but, brought together and intermixed, can be reduced at minimum smelter charges. Favoured by the trend of the mountains and valleys, American railroads are rapidly entering from the south to transport Kootenay ores to the American smelters; but, notwithstanding much greater difficulties of construction, Canadian roads must be energetically built, and, not only will more mines be opened up, but the large reduction works with the large employment of capital and labour will be mostly retained within this province. The opening up of Kootenay during the last six or seven years has been rapid, but the most marked advance has followed the building of the various lines of connection already completed, as is seen, for one instance, in the rise of the new camp of Rossland, but more rapid advance is awaiting these better facilities, which it is safe to predict will be called on to carry a heavy tonnage. Several important lines are seeking aid to be built; lines that will open country that already is proving most promising as it is further prospected, and it is hoped that this aid will be granted, so as to permit the immediate commencement of these important undertakings. Not only is the bulk of this ore being shipped to the south, but the large proportion of the fast increasing demand for mine and mercantile supplies is being satisfied by the cities on the other side of the border, with the result that a great revival in their business affairs has followed the opening up of these good markets in British Columbia, greatly due to the fact that orders can be now more promptly filled and forwarded from this source, this advantage more than counterbalancing the customs duties that are imposed upon imports. Not only this, but much of the mining machinery manufactured in Eastern Canada, and now being extensively ordered, is being brought most of the way over American railroads to the point of entry, Northport. If our own centres of trade are to benefit by this growing business, strong efforts must be made to get these facilities from rapid and prompt delivery which, with customs dues, will more than give Canadian business concerns the advantage, as the fact should be realised that new and large markets are opening up in British Columbia. American business men are making strong efforts to secure this trade, and the current once set in, it will be difficult to deflect it into that channel most beneficial to the commercial interests of this country.

Bulletin No. 2 has been written during a few weeks' examination of all the mines and many of the claims yet ranked as prospects in the immediate vicinity of Rossland. This district has been constantly growing from a small number of claims located on the hill on which the now famous mines are working, until, as work has uncovered a system of parallel veins or leads, in many of which the indications of finding ore are excellent, this area now extends 3 or 4 miles east and west of this centre, and 1 to 2 miles north and south. To the west and also to the east across the Columbia River, most favourable reports concerning the discoveries of ore similar to that of Rossland are being made by prospectors and others who have examined these new localities, and, if time will permit, some of these will be visited and described in the annual report of the Minister of Mines.

The discovery, during the last two or three years, of large bodies of high grade gold ores, in which dividend-paying mines are now being operated, is attracting the earnest attention of many mining men and capitalists of both America and Europe. The opening up of the large mines at Rossland that, notwithstanding many heavy disadvantages—rapidly being overcome, such as means and cost of transportation—have proved very remunerative, and, as more extensive exploratory work and greater depth are attained, promise permanency of large and profitable ore bodies, is stimulating more thorough prospecting, not only around Rossland, but in many other localities in this district, with the result that other camps are quickly coming to the front as good prospects on being worked disclose ore of increasing value.

Many claims at many points in Trail Creek district are now being carefully examined and bonded or bought, which better means of access and egress, now projected or being completed, will render possible their being worked, and the principal or agents representing capital are investigating these new resources. The fact that men interested in the treatment of ores, or their transportation, on studying the conditions and possibilities now shown, have begun large undertakings, or are now planning them, is indicative that the future development of this part of the province will be soon on an extensive scale, and of their confidence, based on experience, in the extent and value of its mineral wealth.

The concensus of opinion of many mining men who have studied the conditions and surface showings in this new camp at Rossland is to the effect that few camps have ever shown so many favourable indications that warrant the belief that on further extensive systematic exploration other shutes of gold ore will be uncovered. Prospecting has disclosed these many parallel veins, varying in width, when exposed, from an inch to several feet, and it is believed that many more ore shutes will be found when these most promising surface indications are thoroughly exploited, for it is quite improbable that the large shutes of rich ore that have been shown on the surface by denudation will be found to be the only ones.

This district has now reached that stage when persistent, plucky development work, sustained by ample capital, must be done to prove up these many veins and surface showings, but a sufficient amount of working capital is demanded, (*a.*) because much of the rock is very hard to mine, necessitating good machinery to make proper progress, (*b.*) considerable or even extensive development work must be done in search for more pay shutes, (*c*) while the more or less faulted nature of the ground, though not serious, will complicate this work. While the present mines were opened up with comparatively small capital by reason of the mines producing pay ore shortly after work was begun, or ore that was very profitable as soons as roads were built over which it could be sent to the smelters, still any enterprise that is now undertaken will require strong financial support, and already several powerful companies are at work.

The output from Rossland this year will not show the predicted increase over that of last year for several satisfactory reasons, although there is now, without doubt, much high grade ore in sight. In the first place better and cheaper means of transport for ore are being awaited, as the shipping mines are now in such a position that they can afford to hold back their shipments for better rates. Again, the smelter at Trail has not until recently been in such working order as to be able to handle anywhere near the amount of ore it is proposed to treat, nor has the tramway yet the proper facilities for carrying away much ore, but both of these, in a short time, should be able to work up to a much greater capacity. In some cases shipments have been suspended on account of the properties being bonded, or until the completion of underground workings that will make mining more advantageous.

The camp is the scene of constantly growing activity. Much good exploring work has been begun, much more is being projected. Already five air compressor plants are installed, and six more are being put in, while larger hoisting engines and pumps have also been bought, most of this machinery being of Canadian make, *i.e.*, the Ingersoll-Sergeant Drill Company, Montreal; the Rand Drill Company, Sherbrooke, Quebec; and the Jenckes Machine Company, of the same place. Altogether $175,000 worth of machinery and supplies have been ordered for the camp.

Production.

Total No. of tons smelted to July 1, 1896	...	27,085
Do. „ ounces of gold	...	45,234
Do. „ „ silver	...	67,793
Do. „ lbs. of copper	...	1,265,362
Do. gross value recovered by smelters	...	$1,007,007

Average net values per ton—gold, 1·67 ounces; silver, 2·5 ounces; copper, 2·3 per cent. Value, $37·18.

In the above returns the compilation was made directly from the shipping returns and books most kindly produced for inspection by the officers of the following mines that have shipped ore other than test lots:—The Le Roi, War Eagle, Iron Mask, Poorman, Josie, Cliff, and Evening Star, and the above results give almost the exact output of the mines at Rossland up to July 1, 1896. The tonnage is the net, or with moisture deducted amounting to ½ to 1 per cent. The amount of gold and silver given is the actual amount allowed for by the smelters, or 95 to 98 per cent. of the assay value of the gold contents, and 95 per cent. of the silver. The percentage of copper given is the assay value less 1·3, as in the general average value the copper assay would indicate 3·6 per cent. of copper in the ore. The gross value includes smelter and freight charges. The output from the free-milling ores of the O.K. Mine could not be obtained in time for this bulletin.

Total amount of dividends paid to July 1, 1896	...	$332,500
Le Roi	$175,000	
War Eagle...	157,500	

Location.

The Trail Creek mining district is located in the southern part of West Kootenay, on both sides of the Columbia River, and along the International Boundary Line between Canada and the United States.

Rossland

The chief mining centre has grown very rapidly to a town of about 4000 people, and is supplied with good hotels, two banks—the Bank of Montreal and the Bank of British North America—churches, stores, a water works system, electric light plant, three newspaper offices, post office, express office, &c., and is noted for the orderliness maintained by the Government officer, Mr. John Kirkup, and his subordinates, many of the chief elements of disorder usually found in a new mining camp being vigorously suppressed. The town is about 6 miles west of the Columbia River, on the north slope of the valley, down which runs Trail Creek to the Columbia, at which junction is the town of Trail, and close to its northern boundary are the principal mines on the slopes that lead up to Red Mountain, Monte Christo Mountain, and the Columbia and Kootenay Mountain, that rise gradually from 800 to 1800 feet above the town; to the south is Lake Mountain, which, with Look Out Mountain, near Trail, comprises the South Belt, and to the west is Deer Park Mountain. One mile and a quarter to the west is a small stream, the east fork of Sheep Creek, flowing southerly and joining the Columbia at Little Dalles beyond the boundary line about 4 miles distant.

Communication and Transportation.

Four years ago only trails led into this part, the Dewdney trail having been built in 1865, but now a wagon road runs to Trail and another down the fork of Sheep Creek to Northport, in the State of Washington, over which much ore has been and is shipped in heavy ore wagons, which return with much of the supplies for the town and the mines. Already three lines of railroad are surveyed to this town, one of which is built and another is building, while it is reported that one of the great American roads in the north is looking for a line of entrance. Of the three lines surveyed, one, (*a*) the Columbia and Western Railroad, has built a narrow gauge line, locally known as the "tramway," easily alterable to standard guage, down Trail Creek to Trail, to carry ores to the Trail smelter or elsewhere, and connection is made with the excellent steamers of the Columbia and Kootenay Navigation Company, that run north 130 miles, connecting with the main trans-continental line of the Canadian Pacific Railroad at Revelstoke, or at Arrowhead, and the railroads at Robson and Nakusp, that run to Nelson and Slocan respectively, and to the south to Lytton and Northport 25 miles. This C. and W. R. R., running 11½ miles to overcome the difference in elevation between Trail and Rossland, of about 2100 feet, using several switchbacks, is now being located westward to the Boundary district and thence on to Penticton on Okanagan Lake. (*b.*) The Canadian Pacific Railroad has a line surveyed in from Robson, which it is expected will be constructed as soon as possible, and extended west to tap the main line, and eastward to the main line, passing by the way of the Crow's Nest Pass, where are located the great deposits of coal that will yet become a strong factor in the smelting propositions of the province. (*c*) The Spokane Falls and Northern Railroad, also known as the Red Mountain Railroad, President, D. C. Corbin, now being built from Northport up the east fork of Sheep Creek, will pass, as does the tramway, in close proximity to many of the leading mines, and will connect at Spokane with the two trunk lines, the Northern Pacific Railroad and the Great Northern Railroad, whence is direct communication with all parts of the United States, as well as easy access to the smelters on Puget Sound, at Tacoma and Everett, to those at Helena and Great Falls, Montana, and to the smelters farther south in Colorado and at Kansas City. Hence the fast developing scheme of transportation will soon change the conditions of this district by giving cheaper and quicker egress for the production of the mines, or for the assembling at the most favourable points at the smelting or other reduction works, the different kinds and grades of ores, the fuels, fluxes, and other supplies that should make possible the much cheaper handling and treatment of the various ores now known to exist in large quantities.

Although much ore of high grade is being mined, large bodies of low grade, averaging $4 to $12 in gold, 1 to 3 ounces in silver, and up to 3 per cent. copper are now exposed, and further necessary systematic and fearless development work must be done, which this

widening range of transport facilities will aid most materially not only in handling the output of this one camp, but in collecting at the best points different classes of ores from the newer localities now being prospected, as well as the camps already established elsewhere in this part of the province. The restriction to the more or less same class of ore, unless it be of a most favourable character, seldom got or maintained, is generally not at all conducive to the best smelting practice, and the localising of the smelting industry of the province at the most advantageous centres where will be collected the different ores from different parts that are so necessary for the most economical treatment, one kind of ore helping to flux the others, will be greatly determined by the shipping facilities by wagon road, railroad, or steamboat, that are now being supplied or projected. As the future of the mining business in Rossland and the surrounding districts will be largely dependent upon the cheapest treatment of the ores produced, and we can now announce the erection in the near future of very extensive smelting plants in the province, communication assumes vital importance, and now it is almost promised that it will be rapidly extended as the ore bodies are found to be persistent and profitable throughout more than a limited area.

The mountains in this Trail Creek region are for the most part rounded and covered with timber, not very high and not precipitous, so that a wagon road can usually be built anywhere without much difficulty, while a railroad can be put through any of the different valleys with switchbacks if needs be, so that nearly any mine will not be difficult of access. The supply of timber for fuel and mining purposes on most of the claims will soon be exhausted, but much can be brought in cheaply by the railroads when the need comes. The supply of water is also small, but so far adequate for mining purposes, and a large supply cannot be got less than 6 miles distant.

Early History.

Early in the sixties the placer mines on Wild Horse, Findlay, and other creeks in East Kootenay, having been discovered, resulting in the rush there of miners, and the constant demand for supplies, as there was no means of communication between the coast and this district, except through the United States, with vexatious delays at the Customs, Mr. E. Dewdney, now the Hon. the Lieutenant-Governor of British Columbia, was instructed to survey and construct a trail entirely within British territory, through the southern part of the province, as a passage to the north had been proved to be not feasible. In 1865 this trail, since known as the Dewdney Trail, was finished, and in its course it passed about one mile south of the present town of Rossland on its way down Trail Creek to the Columbia River. Hence a means of ingress was given to this region, and indications show that early prospectors were attracted to the iron-stained cappings that have now attained such importance and value, as a 5-foot hole on the Le Roi and other openings testify, but the low grade surface rock discouraged them, while the means of getting such ore to smelting centres seemed quite out of reach. However, in 1889 Joseph Bourjouis located the first claim, the Lily May, near the Dewdney Trail, which in 1890 was recorded by J. Bordan. In this year J. Bourjouis located the Centre Star and the War Eagle, while the Virginia and Idaho were staked by J. Morris, his partner. They also discovered the Le Roi, but were forbidden by law to stake more than one claim on the same vein. This piece of ground became the property of Mr. E. S. Topping by his simply paying the expense of recording.

In November, 1890, Mr. Topping met at Colville two Spokane attorneys, Mr. George Foster and Colonel Wm. Redpath, showed them samples of Le Roi ore, and offered to sell one-half interest in the claim for $30,000. These gentlemen became interested in this property, went to Mr. Oliver Durant, a gentleman of long mining experience in the west, in whose judgment they had full confidence, and he, also impressed with the ore, finally secured a working bond on 16-30th of the property for six months, with the proviso that during that time he should spend $3000 on the claim. Although he knew good mining men had condemned the ore deposits of this region as of altogether too low a grade, Mr. Durant came up at once, examined the claim, taking from a shallow cut 16 feet long across solid sulphides careful samples that returned as high as $60 in gold, at the same time visiting the Enterprise, Centre Star, Idaho, Virginia, War Eagle, and Josie. Satisfied with the showings, E. J. Kelly was left in charge of the sinking of a shaft, from which, during the winter, weekly samples were forwarded, with great difficulty, to Marcus, Washington, by trail down Trail Creek and the Columbia, samples that assayed from samples of gold up to $472. In the spring of 1891, after many vicissitudes, 10 tons of picked, pure sulphide ore from the bottom of the 35 foot shaft, where the vein was fully 9 feet wide, were packed out to the Columbia and shipped to the Colorado smelting works at Butte, when the excellent return of $84·40 per ton was given as the value of the ore, or 3 ounces of silver per ton, 5·21 per cent. copper, and about 4 ounces of gold. The bond was then taken up, and in the course of time the remaining 14-30 were sold by Mr. Topping to some of the present owners. The Le Roi Gold Mining Company was then formed, and about 70,000 shares of the treasury stock sold at a small figure.

For over a year Mr. Durant had charge of the work, contending with many obstacles, insisting on the continuance of development, as he pertinaciously believed in the ultimate conversion of this prospect into a valuable mine, but finally he decided to sell out his interest to the others, and with Mr. A. Tarbet bought the Centre Star and Idaho, upon which nearly 900 feet of work were done at a cost of $25,000, work that was the main support of this little camp. But the need of roads was pressing, no advance could possibly be made, and again through the efforts of Mr. Durant, a trail, and then a road, were built up the east fork of Sheep Creek from Northport by the business people of that place, and Captain Fitzstubbs, Gold Commissioner for West Kootenay, ordering the construction of a road up Trail Creek from the Columbia, the conditions of the camp were at once made much more favourable. With the coming of the financial crisis of 1893 Mr. Durant, whose unceasing and determined efforts had overcome many difficulties and disappointments, and demonstrated that the properties he had so faithfully worked at, were good, was forced to suspend operations until 1895, when he resumed work on the Centre Star, now organised into a stock company.

In the winter of 1893 94 the Le Roi, that had shut down upon the expenditure of the proceeds from the sale of the treasury stock, was able to ship by sleighs over the Trail Creek road the ore that had accumulated upon the dump, and this netting a good profit active mining operations were begun, and the fast increasing ore shipments, as detailed elsewhere, bringing handsome returns to those who had pluckily stuck to this claim, the Le Roi was fairly launched upon its successful career as a rich dividend-paying mine. In the meanwhile, Mr. J. A. Finch and Mr. P. Clark had been attracted to the camp, Mr. Finch getting a bond on the War Eagle, which he relinquished after expending several thousands of dollars prospecting; after which Mr. Clark, who had thrown up his bond on the Josie, obtained one on the War Eagle. In the work hitherto done on this property, a large shute of low grade pyrrhotite, averaging $14 to $16 in gold to the ton, had been more or less explored, but on going farther west a few hundred feet, by trenching, the top of a splendid body of good ore, averaging 2½ ounces in gold, nearly 100 feet long, and 8 to 12 feet wide was uncovered, and this mine took its place among the best in the camp, paying shortly afterwards its first dividend, February 1, 1895, of $32,500.

Another strong factor in the progress of the camp is the connection with of Mr. Heinze and Mr. D. C. Corbin, President of the Spokane Falls and Northern Railroad. Mr. Heinze, the head of a smelting works in Butte, Montana, sent in two men to go over the ground, with the result, after much negotiating, that he made a contract with the management of the Le Roi Mine that they should supply him with 37,500 tons of ore on the dump, which he would pay for after the shipment and sampling of each lot, deducting $11 per ton for freight and treatment charges; and also 37,500 tons on which the charges should be at the lowest rates obtainable in the open market. With this amount of ore contracted for, a land grant from the Provincial Government and a bonus of $1 per ton smelted from the Dominion Government, Mr. Heinze erected the Trail smelter and built the tramway from the smelter to the mine. Mr. Corbin, who has extended his road from Northport to Nelson, supplied also with a Provincial charter and land grant, is pushing his road up Sheep Creek from the south to Rossland. Thus constantly as the conditions improve whereby the cost of mining, shipping, and treating the ore is materially lessened, does the limit decrease at which the ore ceases to be profitable, and much more of the lower grade ore now in sight is made available.

(To be continued.)

THE ROASTING OF IRON ORES, WITH THE VIEW TO THEIR MAGNETIC CONCENTRATION.

By Professor H. WEDDING, Bessemer Gold Medallist.

LONG before iron ores were smelted for pig-iron in the blast-furnace, roasting processes were employed prior to the direct extraction of the metal from the ore, and, after the introduction of the blast-furnace process, the roasting of iron ores was still retained. As a rule, the roasting is a preliminary to the reduction process. It is only exceptionally or incidentally that it has to effect the purpose of simultaneously eliminating elements, such as sulphur or arsenic, that could detrimentally influence the iron produced. It is only in very recent times that roasting processes have also been employed in order to render iron ores magnetic, so that they can subsequently, by magnetic concentration, be freed from gangue—that is, from constituents not containing iron, and be enriched in iron.

On considering the composition of the ferruginous constituents of the ores practically employed in the metallurgy of iron, there will be found, as a rule, in the ores supplied by nature, oxides, hydrates, and carbonates of iron; magnetic oxide in magnetite ores; ferric oxide in red hematite ores; ferric hydrate in brown hematite ores; ferrous carbonate in spathic iron ores, clay iron ores, and carboniferous iron ores. If sulphur compounds occur, which have to be used as iron ores, as, for example, iron bisulphide in iron pyrites, they must always be first converted into ferric oxide (purple ore) before the material can be further utilised in ironworks practice. Again, from the hydrates water must be expelled, and from the carbonates carbon dioxide, before the iron of these ores can be reduced.

The heats of combination of all iron ores show that a reduction to iron cannot occur as long as sulphur, water, and carbon dioxide are still present. It might consequently be assumed that the only object of roasting was the expulsion of sulphur, water, and carbon dioxide with a view to the reduction of the iron, were it not that the practical facts were in contradiction to this, in that they show that as a matter of fact even more iron ores that contain neither sulphur, water, nor carbon dioxide, but that consist only of magnetic oxide or ferric oxide, can with advantage be subjected to roasting. The object of this is either to facilitate the subsequent reduction by the formation of the most easily reducible oxygen compounds, or to facilitate the reduction by loosening the texture of iron ore.

The author proceeded to discuss the influence of roasting on the reducibility of iron ores.

As an average it may be assumed that the heat of formation of anhydrous carbonate of iron from ferrous oxide and carbon dioxide, as measured from the heat of formation of oxides of other earths and metals in combination with carbon dioxide, may amount to 30,000, or, in other words, to 259 calories for 1 kilogramme. It must, however, be pointed out that this heat value is less than that of many other carbonates—for example, calcium carbonate. The same heat is required for the decomposition as for the formation. All such thermal decomposition processes differ according to whether the gaseous products of decomposition remain in the space in which the decomposition is effected or are drawn off from it. In any case it is possible, without any difficulty, to drive off the whole of the carbon dioxide from all iron carbonates before melting results. This is not the case with all carbonates, as, for example, with lead carbonate. It is remarkable, too, that unlike other carbonates—for example, calcium and magnesium carbonate—this decomposition is not possible without a simultaneous partial change of the carbon dioxide. A not inappreciable portion of it is converted into carbon monoxide, and the atom of oxygen thus set free combines with the ferrous oxide to form a higher oxide. As for this decomposition, in whichever way it is effected, there are necessary in any case for the kilogramme of carbonate about 259 calories, for which, in the heat of the gases remaining after the reduction of the iron oxides, an adequate source cannot be found, it is right that the iron carbonates should be roasted before they pass to reduction—that is to say, before they are charged into the blast furnace. In any case the heat required for driving off the carbon dioxide is produced and utilised more cheaply outside the blast furnace. If, on the other hand, it is desired to carry out the roasting in the blast furnace itself, which, as has been already pointed out, is occasionally done, there will result the drawback that the reduction of the iron ores will take place in zones considerably deeper than after a preliminary roasting, and that, consequently, an increased consumption of fuel (coke) will be necessary.

If it has been shown that by the roasting the carbon dioxide is driven off, and consequently the reducibility of the carbonate brought about, the further question arises, what kind of roasting of the carbonates—that is to say, whether simple decomposition or the roasting in an oxidising or reducing atmosphere—would be of the greater advantage for the subsequent reduction? And with this is connected the question whether, by the roasting of oxide of iron—red hematites, for instance—any advantage whatever is gained for this reducibility. Such an advantage exists, as a matter of fact, otherwise red hematites would only then be roasted when this was intended either for increasing the porosity of the ore or for the expulsion of sulphur.

The way in which the reduction of the ferric oxide and the magnetic oxide is effected in the blast furnace may be considered to be as follows:—In the first place, with increasing temperature, the decomposition of carbon dioxide into carbon and carbon monoxide diminishes, the ferric oxide absorbing far more carbon in this way—which afterwards helps in its reduction—than does magnetic oxide; and, secondly, with increasing temperature the reducing power of carbon monoxide diminishes, the final reduction to iron being consequently rather due to solid carbon than to carbon monoxide.

Ferrous carbonate, too, yields residues of different compositions after being roasted at different temperatures. The higher was this temperature the greater the loss of reducibility in the blast furnace which the ores experience. To prepare an iron oxide for reduction in the blast-furnace, it is consequently by no means immaterial in what way—that is to say, at what temperature, and in what kind of atmosphere, the roasting is effected. Rather must that kind of roasting be considered the most suitable for the reduction in which, owing to a low temperature and oxidising atmosphere, ferric oxide is formed from magnetite and spathic carbonate, or is retained in red and brown hematites.

The author's review of the reactions had first to be presented to show that every roasting by which a magnetic product, Fe_3O_4 or Fe_2O_7, is obtained, is disadvantageous to subsequent reduction in the blast furnace, or even in the open hearth. Despite this, such a roasting may be of advantage when it is a question of preparing from a poor or impure ore a richer and purer product by subsequent magnetic treatment.

The author proceeded to discuss the roasting of iron ores for subsequent magnetic treatment. The farther the utilisation of the world's stores of iron ores is carried the rarer become those ore deposits which, combined with adequate richness, are sufficiently pure for blast furnace treatment, and still much rarer are those which appear adapted for the open hearth process—that is to say, for the manufacture of ingot iron from pig iron in the reverberatory. The question of the concentration of iron ores is becoming year by year more and more pressing for iron metallurgists. The prosperity of a country is dependent on its iron industry, but largely, too, on the iron ores it uses being mined in the country itself. Rich and pure iron ores still exist, it is true, in adequate quantity, but they are confined to a few places in different countries. Our excursion brings us to Spain, the country which provides all the iron-producing countries of Europe with ores of this kind. Sweden is not less rich in ores such as these; but how long will these sources of supply be available? The iron metallurgist finds it day by day a more pressing matter to enrich and improve unsuitable iron ores, and for this purpose magnetic concentration occupies the foremost place. Of the two different compounds of iron with oxygen, practically only the two oxides, Fe_3O_4 and Fe_2O_7, are adequately magnetic. Ferric oxide is nearly non-magnetic and ferrous oxide cannot be produced in practice. On the other hand, the ferric oxide in red hematite or in dried brown iron ore, may be readily rendered magnetic by roasting—that is to say, may be readily converted into the magnetic oxide. Three possibilities exist in this direction. When the atmosphere, during roasting, is oxidising in character—that is to say, when air is admitted—either the ferric oxide is converted into the magnetic sub-oxide Fe_3O_7 or Fe_2O_4, or else, by the accurate roasting of carbonates, a magnetic oxide is produced, or from the oxide (Fe_2O_3) by a reducing roasting a magnetic lower oxide is obtained.

Whether any one of these methods will be profitable is mainly a question of cost. The reduction is certainly rendered more difficult, the fuel consumption during reduction becoming greater, and the magnetic roasting with the subsequent treatment also in itself entails additional expenses. Probably, therefore, in most cases a preliminary preparation of the ores for the blast furnace treatment will be out of the question. On the other hand, a pure ore, despite great cost, may in many cases prove useful in the open-hearth process—that is to say, in the oxidising fining for ingot iron in a reverberatory provided with heat-regenerating chambers, by means of which, that is, molten pig iron is converted into molten malleable iron. One sees, therefore, that the question as to what is to be done to convert non-magnetic ores into magnetic ores is by no means one that should be overlooked, but that it is rather of great importance.

Under the head of Magnetisation of the Various Iron Ores, the author made the following remarks:—

1. *Magnetites.*—Magnetites are of themselves magnetic, and do not, therefore, need to be first rendered magnetic before they can be submitted to a magnetic concentration. Nevertheless, roasting may be necessary for such an ore, partly for the purpose of facilitating its further reduction in size for the magnetic treatment, by rendering it more easy to break down, and partly for the purpose of eliminating the sulphides it may contain, such as iron or copper pyrites, or zinc blende. Magnetites only lose very slowly their natural magnetic properties on roasting, no matter whether the roasting is oxidising or reducing in character. Only when they are maintained for a very long time at a medium red heat, and with access of air, will the magnetic oxide pass gradually into ferric oxide, and the ore cease to be magnetic.

2. *Spathic Iron Ores.*—From the carbonates, by suitable roasting, the magnetic iron oxide can be obtained direct. By roasting in a neutral atmosphere the "ignition" magnetic oxide Fe_3O_4 is obtained, and, by roasting in a moderately oxidising atmosphere, the magnetic oxide Fe_2O_3. If, however, the carbon dioxide is once eliminated, both the magnetic oxides pass readily under the action of the oxygen of the air into the non-magnetic ferric oxide Fe_2O_3. If, therefore, it is desired to produce the magnetic oxide, the whole success depends on roasting with exclusion of air, or, if this is impossible, on reducing the air access to a minimum. The ferric oxide which is produced when there is free access of air is, however, at higher temperatures, just as decomposable again into the magnetic oxide and oxygen, as has already been referred to in connection with the native magnetites. It is possible, therefore, without endangering the magnetic character of the product, to roast spathic carbonates at temperatures as high as may be necessary to eliminate as far as possible the sulphur occurring in the spathic ores as iron and copper pyrites, zinc blende, &c.

On the other hand, this necessitates a larger consumption of fuel than would be necessary if the spathic ores were only to be converted at a low temperature into the condition of the magnetic oxide. For the preparation of magnetic oxide from the spathic carbonate no reducing roasting atmosphere is consequently necessary.

3. *Red Hematites.*—Magnetic oxide can be prepared from the ferric oxide of red hematites in two different ways:—(1) By heating strongly in the absence of air. One atom of oxygen separates off in this way, and, indeed, by properly firing, two oxygen atoms may be eliminated—$Fe_2O_3 = Fe_2O_3 + O = Fe_3O_4 + 2O$. For this reduction of ferric oxide, as Phillips has shown, a relatively very high temperature is necessary, at which, if the red hematite contains a quartzose gangue, slag may readily form. In any case it is difficult, at the high temperatures at which this separation of oxygen takes place, to avoid a slutering, or even, it may be, fusion of the gangue with the ferric oxide, and the formation of an iron silicate.—(2) The second method of preparing magnetic oxide from red hematites depends on the roasting of the ore under the action of reducing gases, of which at low temperatures hydrogen, and at higher temperatures carbon monoxide, are most suitable in their action. To be certain, therefore, it is best to employ in the roasting a mixture of both these gases—that is to say, to roast with ordinary water gas. The readiness with which the reduction takes place depends in both cases, with red hematites, largely on their more or less dense texture. Many red hematites are so excessively dense that just as little reduction takes place with as without the use of reducing gases, even when the ignition is long continued. On the other hand, blast furnace practice shows that there is no red hematite which, given adequate time, is able to resist the reducing action of carbon monoxide, even completely down to the metallic state; and this reduction must, of necessity, be preceded by a transition through the different stages of the magnetic oxides of both kinds.

4. *Brown Iron Ores.*—Before the ferric oxide of the hydrated iron oxides can be reduced the water must first be eliminated. The residue then behaves as a red hematite would, but the reduction proceeds far more readily under the influence of

reducing gases, owing to the more porous character of the ore after the elimination of the water. . . .

5. *Pyritic Ores.*—Pyritic ores, before a reduction can take place, must first always be robbed of their sulphur contents, or at least mainly so. As in any case pyrites is subjected to an oxidising roasting for the purpose of obtaining sulphur dioxide from its sulphur contents, the residue is in practice always ferric oxide, and this ferric oxide behaves exactly as that of red hematite, except that it is a little more difficult to reduce, owing, perhaps, to the presence of some residual sulphur. As is well known, iron pyrites is only then used as an iron ore when it contains copper, or, perhaps, too, zinc. In addition to the chlorides of the metals resulting from the oxidising roasting of the pyrites in admixture with salt, ferric oxide also results. The former are extracted by leaching with water, and the ferric oxide remains behind in a practically pure state.*

Dr. Wedding discussed the size of the ores to be roasted to magnetic oxide, which is not unimportant. Before all things it is necessary, in order to obtain a good result, to have the pieces that are to be roasted as nearly as possible of the same size. It may be taken, as a rule, that the magnetisation takes place the more readily the more the ore is in the form of small but solid pieces which do not crumble up or fly into bits on roasting, since the gas can then readily pass through the inter-spaces, and the relatively small ore particles are rapidly converted into magnetic oxide right through their mass. A much larger size of the ore particles is disadvantageous, as for their conversion into the magnetic oxide too long a time is necessary, and since it is then uncertain whether this magnetisation has gone right through to the centres of these ore lumps.

Furnaces.

The requirements for the roasting of different kinds of ores, and especially of different ore sizes, necessitate naturally the construction of different kinds of furnaces. Lump ores are always best roasted in shaft furnaces, in which an easy and regular passage of the ore through furnaces of circular section is obtained. The section of the furnace should widen slightly from the throat downwards, in view of the gradual heating of the ores and their expansion. Inversely, this leads also to a more regular upward passage of the furnace gases through the ore. It is, therefore, a question of causing the ore to pass through two different stages, first heating them, and then reducing them if they are oxidised, provided, of course, that they are red or brown hematites. This must be effected by using gas in two ways, partly as fuel and partly as the reducing agents. As Phillips has observed in his description of the roasting of red hematites, the gas for heating purposes is best introduced into a combustion chamber in which it is burnt around the furnace, so that only the flame enters the furnace. It need hardly be mentioned that gases cannot be burnt without the presence of a not inconsiderable excess of air, and attention has therefore to be given to seeing that in the heating of the ore an oxidation is as far as may be avoided. Only in the case of red hematites, which are to be reduced by the splitting off of oxygen at a high temperature, is a temperature to be employed which may be as high as is possible of attainment, and in this case it may be a matter of indifference whether an excess of oxygen is present or whether this is absent. In the case of spathic ores, the only thing that is necessary is heating, in the absence of air, with no subsequent oxidation, although here, too, the treatment with reducing gases can only be advantageous in character. The reducing gas, whether ordinary producer or, and better, water gas, must then be passed into the heated ore from a lower level, and caution is necessary to ensure that no air can enter. The openings which are to be employed for the withdrawal of the roasted ore from the furnaces must, therefore, be capable of being closed perfectly air-tight during the roasting, and the brickwork, too, must be built so as to withstand the passage of air through it. To be able, however, to readily withdraw the ore, the reducing gas must be passed into the furnace at a level somewhat above that of the withdrawal doors. One obtains in this way the advantage that the gas in its upward passage at the same time cools down the hot ore, with the result that this arrives at the withdrawal openings in an almost cold condition. The space between the entry of the hot burnt gases and those used for the reduction ought never to be small, as is often the case in Swedish calciners.†

In the case of pulverulent or fine ores the use of shaft furnaces is not advisable, and it is better in such a case to employ zig-zag furnaces, such as were used at Allevard, or channel furnaces with inclined beds. Still, care should, as far as possible, be taken never to have to deal with such fine ore, but rather with ore of a coarser character.

Concentration of the Magnetised Ore.

The magnetised ores, after the roasting, must be submitted to concentration, which may in the first instance be mechanical in character, to separate from each other the ore particles of different sizes, and then magnetic, or it may be magnetic from the very commencement. This must be entirely dependent on the character of the ore as regards admixture of gangue and iron oxides.

Very few ores are of themselves pure enough for the open hearth process, nor can they be converted into an adequately pure form by mechanical concentration, so that there is scarcely any other way of purifying them which could prove itself commercially economical except the method of magnetic concentration, which, if the ores are not magnetic, must be preceded by a magnetic roasting.

* Purple ore is pure enough for magnetic separation to be unnecessary.

† One of the principal conditions for properly roasting iron ores into the magnetic state is the keeping of a right temperature in every part of the furnace. Since the Le Chatelier pyrometer is made in the form described by the author (*Stahl und Eisen*, 1896, September), all difficulty in controlling the temperature is obviated, and the instrument may unhesitatingly be relied upon for this purpose.

FRONTINO AND BOLIVIA.

The directors have received advices from Mr. John Penberthy, dated July 21 and 23, and August 10. The statement for the month of July is as follows:—2474 tons produced—bullion, 2540 ounces. Tributers' gold produced—bullion, 124 ounces. Total, 2664 ounces; also 66,280 lbs. of sulphurets, valued at £272 2s.; estimated value of the gold and sulphurets, £6101 5s. 4d.; cost of mines, medellin, and in London, £6039 13s. 4d. Estimated excess of returns, £61 12s. It will be seen from Mr. Penberthy's reports, which appear on another page, that the operations have been much retarded by deficiency of water owing to absence of rain. Attention is called to the very interesting account regarding the Silencio Mine contained in Mr. Penberthy's letter of July 23. On September 15 the directors received a cablegram from Mr. Penberthy to the following effect:—"Value of August gold and sulphurets, £9590; estimated cost, including London payments, £5550; estimated profit, £4040. Mines are looking better."

— The SIERRA GOLD MINING COMPANY (LIMITED) announce a dividend of 1s. per share, free of income-tax, payable on October 5. The register of shareholders will be closed from September 21 to October 8, both days inclusive.

A NEW WATER-COOLED HOT-BLAST VALVE.

By WILLIAM COLQUHOUN, Assoc.M.Inst.C.E., Liverpool.

IN these days of high temperatures, the serious effects of prolonged stoppages in blast furnace practice have directed the attention of engineers and managers to the importance of providing themselves with appliances that will not only stand the high temperature for the longest possible period, but which are easily accessible for repairs, and of such a character that the most exposed parts of the apparatus can be changed without any long interruption of the blast.

Having these requirements in view, a great many attempts have been made to provide a hot-blast valve, the more exposed parts of which are artificially cooled. In some instances, the cooling agent employed has been a current of cold air, by means of a connection with the cold-blast main; but the cooling effect was found to be insignificant. The application of water was, therefore, the only effective method of keeping the valve seat and valve slide cool. Its use, however, presented serious difficulties, and even danger, as no water-cooled valve could be considered safe that exposed the circulating pipes (having, possibly, sliding-gland connections) to the high temperature of the blast; for, if any fracture takes place, the hot-blast main may be flooded before the accident is apparent, and in many situations the water will find its way into the tuyeres. The valve patented by Mr. Jenkin Lewis provides against any serious accident of this character, and since its introduction during the last three or four years into a large number of the more important plants throughout the country there has been no reason to complain of its safety or efficiency. It consists of a brick-lined wrought-iron or cast-steel casing and hood, within which is riveted a flange for holding the valve seat, to which it is bolted with three or four bolts. A coil of 1 inch water pipe is cast within the valve seat, which is a ring cast in good grey iron, and faced true with the flanges of the valve casing. Where the water supply may be relied upon to be clean, plentiful, and under fair pressure, it is sufficient for the pipes to make one complete turn round the valve seat, and to couple with the supply and exhaust by means of gun-metal unions. But in cases where the water is dirty it is advisable to cast the pipes in two half-bends, and couple them together with a short U-bend, through which, when detached, a pricker may be passed to clear obstructions. The interstices between the seat and the casings are filled up with purimachos cement, and the back of the seat is protected by well-fitted fireclay blocks. In practice it has been found that a water-cooled valve seat rarely requires changing if it has been properly tested in the first instance, and its shape prevents it from warping and consequent leakage of blast.

The seat may be changed, however, by slinging the valve down, taking out the brickwork, and knocking out the four or more studs or bolts holding the seat to the inner ring. The slide is a cast iron equal-sided disc, faced on both sides so as to be reversible. The disc has an extension or arm upon which a hollow cast steel trunnion is bolted, forming a centre on which the disc may be moved radially, so that when full shut it is concentric with the valve seat, and when full open is withdrawn within the hood so as to leave a clear passage. It is actuated by a wrought iron lever keyed to the steel trunnion, and carrying a balance slightly less heavy than the disc. The water circulating coil is cast in the metal of the disc, and the ends of the pipe protrude right and left at the centre upon which the radial motion acts, at right angles to the valve faces. The two halves of the hollow steel trunnion are passed over these pipe ends, which are then threaded, and a pair of gun metal asbestos-packed swivel glands screwed on to stop any leakage of blast. The supply water, therefore, enters through the swivel gland into one end of the trunnion, passes round the valve, and exhausts at the other end. The steel trunnion fits loosely on the arm of the valve slide, and a wedge-shaped projection on the rim of the disc, engaging with the tapered side of a stop-block at the moment when the slide is full closed, brings it against the face of the seat. The blast, however, does this even more effectively, and completely seals the valve, unless warping has taken place; in that event it can be easily felt by the workman that the contact is imperfect. The trunnions turn in bearings bored, half in the valve hood and half in a lid fitted thereto, the lid giving access into the interior, and covering an opening sufficiently large to admit of the passage of the slide. The slide may either be turned face about or changed completely in less than 15 minutes. The advantages claimed for the valve are apparently well substantiated in practice, now that certain defects in the earlier designs have been removed; and it is particularly valuable for throttling a very hot and cutting blast in half or quarter closed positions. The moving parts are extremely simple; there are no rods or glands to pack and keep tight; the water pipes at every point in the interior of the valve are enclosed in the metal of the various parts; and, finally, the slide may be rapidly changed without taking down or dismantling the valve.

It is owned and made by Messrs. Francis Morton and Co., of Liverpool, in all sizes from 15 inches to 30 inches diameter, and in small sizes for tuyere valves.

COMPANY FINANCE.

Reports, Balance Sheets, Dividends, &c., of Mining and other Companies.

EAST RAND EXTENSION GOLD MINING COMPANY (LIMITED).

The following circular has been issued to the shareholders:—Owing to the numerous enquiries by English shareholders as to the present position of the company, the London board asked Mr. Brayshaw, the Chairman of the company in Johannesburg, to give them a complete statement of the company's assets. This has now been received, and the following information is taken therefrom:—The total issued capital of the company is £250,000, which included originally £100,000 cash working capital. Various interests in the way of claims, options, and participations have been acquired. Of the total claims purchased 700 are situated on the dip and extension of the East Rand Proprietary Mines' property, and of these 119 claims were sold to that company in exchange for 18,500 East Rand Proprietary shares. A few only of these shares (less than 1000) have since been disposed of, and at the present price, therefore, this holding alone represents a cash asset of nearly £150,000. Of the remaining 581 claims 192 are very favourably situated, being bounded on the north by the Boksburg gold mines, on the east by claims held by the East Rand Proprietary Company, and on the south by the Barnato Consolidated Mines claims, and by some 74 claims belonging to the East Rand Proprietary Company. The position of the whole of these claims will be seen by reference to Goldman's map of the Farm Leeuwpoort. In addition to the above 581 claims and the East Rand Proprietary shares, your company holds the following assets:—£50,000 in cash and readily realisable securities, while a further £50,000 has been invested in the purchase of the following claims and interests, the majority of which were bought during the late depression and at low prices:—One quarter interest in the Farm Daspoort; one quarter interest in the purchase of 61 claims on the dip of the Consort Consolidated Company at Barberton; 123 claims in the Barberton district (Eastern Star and Eclipse); 180 claims on the Woodstock Extension; an interest in the Florida Extension, equal to about 10,000 shares; £1250 in a syndicate holding some claims adjoining the Violet property; an interest in the farm Brakfontein, in the New Republic, Zululand; an interest of 69 claims adjoining the Buffelsdoorn property; £7580 invested in a block known as Belgravia Buildings, Johannesburg, which, after providing ample office accomodation for the East Rand Extension Company, brings in a net revenue of £1080. From the above statement it will be seen that, including the £100,000 of cash working capital originally provided and the value of the East Rand Proprietary shares held, the company has practically received in cash an amount equal to the whole of its issued capital. In addition to this strong financial position your company holds over 1000 claims well situated, while its interest in Daspoort is alone a most valuable one.

THE ARROW BROWNHILL GOLD MINING COMPANY.

The following is from a circular issued to the shareholders:—It will be remembered that the company originally purchased a claim at the Broad Arrow which your directors believed to be a valuable mine. A very careful examination of the mine by two competent experts, however, led your directors to the conclusion that the mine was of little value, and could not be worked at a profit. The correctness of these reports has been confirmed by the subsequent developments made by the company's engineer. Your directors, on receipt of the expert's reports, placed themselves in communication with the vendor of the mine, and, after taking counsel's opinion, accepted the proposition made on behalf of the vendor, viz.:—That if the developments proved the correctness of these adverse reports, the company's engineer should find a suitable property, which the vendor undertook to convey to the company free of cost, the vendor further agreeing to provide further working capital for the company. After examination of several mines in various parts of the colony, Mr. Taylor, the company's engineer, entered into a provisional contract to purchase 129 acres at Mount M. Ie olm. In forwarding his report on this property, Mr. Taylor strongly recommended its purchase, and your directors, acting on his recommendation, agreed to accept the property. The vendor provided the purchase-money, and entered also into an agreement to take up at least 7000 further shares of the unissued capital of the company to provide additional working capital. Mount Malcolm, where the mine is situate, is stated to be one of the most promising districts in West Australia, and is about 90 miles north of Menzies, and, although at some distance from the railway, possesses the advantage of a supply of good fresh water and of mining timber.

— The OURO PRETO GOLD MINES OF BRAZIL (LIMITED) have sold the July gold for £5292 18s. 5d.

— The NEW HERIOT GOLD MINING COMPANY (LIMITED) have declared a dividend of 20 per cent. to all shareholders registered on September 30. The warrants for this dividend may be expected in Europe at or about the end of November next.

— The GREAT EASTERN COLLIERIES (LIMITED) have made a profit for the month of August of £3300.

— The directors of the LIBIOLA COPPER MINING COMPANY (LIMITED) have declared an interim dividend of 2s. per share, free of income tax, payable on 30th inst. The transfer books will be closed from the 19th to 30th instant, both days inclusive

— The DAY DAWN BLOCK AND WYNDHAM GOLD MINING COMPANY (LIMITED) have sold through Messrs. Johnson, Matthey and Co. (Limited) bullion ex s.s. *Duke of Westminster and Merkara* for £15,994 1s. 11d. Warrants for the dividend payable were posted to 2143 shareholders on the London register.

— The CITY AND SUBURBAN GOLD MINING AND ESTATE COMPANY have declared a dividend of 2½ per cent. to all shareholders registered on September 30. The warrants for this dividend may be expected to arrive in Europe at or about the end of November next. Due notice will be given by advertisement of the date and place of payment of bearer warrant coupon No. 1.

— A dividend (No. 17) of 60 per cent., being at the rate of 120 per cent. per annum, has been declared by the board of the CROWN REEF GOLD MINING COMPANY (LIMITED) for the half-year ending September 30.

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Special facilities are afforded to Mining Students for obtaining a practical knowledge of their subject in the Collieries of the district. The courses next Session will include Special Classes in Surveying, Ore Dressing, and Gold Mining.
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Detailed information as to subjects of instruction, certificates, fees, &c., may be obtained from the College Calendar, or from the Registrar, Firth College, Sheffield.

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The Session will begin on Monday, October 5, 1896.
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J. A. JENKINS, B.A., Registrar.
University College, Cardiff, August, 1896.

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DIVIDEND No. 2.
NOTICE IS HEREBY GIVEN, that a DIVIDEND of 7½ per Cent. (Seven and a-Half per Cent.) has been declared by the Board for the half-year ending July 31, 1896, payable to Shareholders registered in the Books of the Company on Wednesday, September 30th, 1896.
The Transfer Books will be closed from Thursday, October 1st, to Thursday, October 8th, 1896, both days inclusive.
Due notice of payment will be given to Holders of Share Warrants to Bearer,
By Order,
B. J. WHITE, London Secretary.
99, Cannon Street, E.C., September 18th, 1896.

LANGLAAGTE ROYAL GOLD MINING COMPANY (LIMITED).
NOTICE IS HEREBY GIVEN, that the date of the GENERAL MEETING to be held at Johannesburg, having been altered to the 29th October, the Transfer Books will be closed from the 13th to 29th October, both dates inclusive, instead of from the 22nd September to 13th October.
By Order,
Johannesburg Consolidated Investment Company (Limited),
London Agents,
T. HONEY, London Secretary.
7, Lothbury, E.C., 18th September, 1896.

THE GREAT BOULDER NO. 1 (LIMITED).
NOTICE is HEREBY GIVEN, that the Share Transfer Books of the Company will be closed from the 21st September to the 3rd October, inclusive, for the purposes of the Statutory Meeting to be held at Winchester House, Old Broad Street, on Thursday, the 24th September, at 2 p.m.
By Order of the Board,
JAMES EDWARDS, Secretary.
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. ADVERTISEMENTS (which should in all cases be sent direct to THE BUSINESS MANAGER) can now be received for the forthcoming issue of THE MINING JOURNAL, RAILWAY AND COMMERCIAL GAZETTE, on FRIDAY, at 15, FINCH LANE, E.C., up till 6 p.m., and at 3, DORSET BUILDINGS, SALISBURY SQUARE, E.C., until 9 p.m.
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LONDON: SEPTEMBER 19, 1896.

THE OUTLOOK IN BRITISH GUIANA.

THE Venezuelan question in its industrial bearing is shortly to be carried a very important step forward towards its conclusion. The statement has recently been published in London that Sir AUGUSTUS W. L. HEMMING, the Governor of British Guiana, has been on a tour of inspection through the auriferous regions in the north-western part of the colony, and that he will shortly come to England for the purpose of consulting with the Colonial Secretary as to the outlook in British Guiana. If the Governor's report be instrumental in opening the eyes of the public to the vital importance to Britain of the stretch of disputed territory, the official journey will certainly not have been made in vain. As is now known, the internal economical condition of the colony has been brought near to a serious *impasse* by the moribund condition of the sugar industry; and the discovery and partial opening up of gold-bearing quartz reefs, long known, or at least suspected, to exist, has afforded the colonists a very practical and satisfactory method of escaping from their difficulties. It cannot be denied, however, that the question assumes a grave aspect in view of the fact that the greater part of the gold-bearing territory lies within the disputed lines, and until the political problem has been solved the question, so far as it affects British gold mining, will remain at issue. In the meantime, the companies owning property within the disputed territories are not abating their efforts towards the opening up and development of their mines, because assurances have been received from both sides that, whatever settle-

ment be given to the question of Government, the operations of the industrialists will be allowed to go on undisturbed. It is obviously to the interest of both parties that this should be so, since their revenues will be bound to receive a large accession of funds accumulated during the present period of unsettlement. From all reports, there appears to be no longer the possibility of doubt as to the auriferous character, not only of the doubtful country, but also of other tracts within the unchallenged domination of Britain. That gold in no inconsiderable quantities does exist among the rivers and swamps of these tropical regions is shown by the statement that 776 ounces of gold has been realised from a 10 day's crushing. This result from a quartz reef is nothing less than an epoch in the country's industry, since it is the fact that nearly the whole efforts of the miners have hitherto been concentrated upon placer mining. Indeed, there were at one time many doubts expressed as to whether quartz mining could ever be satisfactorily carried on within the confines of the colony. This product at Barima performs the useful office of settling the question once and for all. An additional impulse will also undoubtedly be given to quartz mining by the provision of better means of communication from one district to another, and the three-fold system of railway, steamboat, and road communication having lately undergone some important modifications and improvements, the work of introducing machinery into the upper reaches of the tropical rivers will be greatly simplified. A word of caution may properly be addressed to the British public in regard to the probable future of mining in British Guiana. Unfortunately, it is the custom with a large proportion of the leaders of mining in almost every gold field to give by far too much play to superlatives of speech and exaggerated descriptions. They are not contented that their slice of the auriferous world should be easily worked and highly remunerative, but they are perpetually prone to speak of it as if it were far in advance of all other fields on the habitable globe. Such language has been used in reference to British Guiana, and it is at once apparent how completely out of place it is with regard to a field which, like the Barima and the adjacent river valleys, has, whatever its future may be at present, still to pass out of its noviciate. Everybody interested in mining in British Guiana will be extremely pleased when the pending political disagreement has at last reached a satisfactory settlement. Notwithstanding that the colonists are making great efforts to develop a branch of industry which is to take the place of sugar growing and refining, there must necessarily be a distinctly disquieting influence exercised by the shadow which hangs over the international horizon. Nobody supposes for a moment that we shall ever go to war over the matter, but British industrialists may at least be pardoned for strongly hoping that their mines may be finally allocated in British territory, since there is no knowing what causes of commercial disturbance may arise within the boundaries of the boisterous little Republics of South America. Venezuela is one of the best of a crowd of badly-governed States, but it still leaves much to be desired in the way of general economical and political stability. The conference which is to take place between Sir AUGUSTUS HEMMING and the Colonial Secretary can hardly be without important results upon the future of British Guiana, and there is ground for hoping that it may contribute, to some not inconsiderable degree, to the ultimate settlement of the knotty international point now at issue.

STOPPAGE OF AN IMPORTANT COLLIERY.

WE greatly regret to learn that one of the large collieries in East Durham is about to be laid in. Notices were served on the 11th inst. on nearly 1500 miners employed at the Haswell Colliery, to terminate their engagements in 14 days. This colliery is a comparatively old one, the pits having been sunk in 1835. Of recent years there have been close on 2000 men employed in one way or another at this colliery, which produces some 400,000 tons of coal per annum. The small town or village of Haswell has been depending almost entirely on the colliery, and probably contains not far short of 8000 inhabitants, all of whom will be most seriously affected by the stoppage of the colliery. The pits were operated by a limited company, and it is perfectly well known that this company has not only been drawing no dividends out of these pits for some considerable time, but has, on the contrary, been losing money, and recently losing very heavily. Our readers will remember the very similar stoppage of Rainton Colliery, which lies in the same district, in the earlier part of this year, and the disastrous financial conditions that were then disclosed. It is doubtful whether matters here are much, if any, better, and under the circumstances it does not seem very likely that any other company will be disposed to take up the lease which the present holders are relinquishing. It is an open secret that Lord DURHAM sold his Durham collieries because he could not make any profit out of them; but the purchasers are known to be remarkably shrewd men of business; and it is not to be supposed that they would have bought had they not seen their way to make something out of the transaction. There seems, however, to be no indication of anything of the kind in the case of Haswell.

The stoppage of such a colliery is a matter for national regret. The coal is not worked out. There is still coal there, but it does not pay to raise it at present prices, so that there is in reality a portion of the national wealth that is being destroyed by the closure of the pits. There are, of course, two factors in this disastrous occurrence to be considered—namely, the price at which the coal can be got from this particular mine, and that at which it can be sold in the world's market. The former figure is, in the present case, largely determined by the circumstance that the colliery has been working for some 60 years, so that the "wo king face" is a long way "inbye," or, in other words, the coal that is left is a long way from the shaft. This means expense in various ways. The men, having a long way to go from the shaft to their work, are entitled to proportionately high tonnage rates, so as to cover the time they lose in getting to their work, because a hewer's working hours are calculated from "bank to bank." The expense of underground haulage is naturally also high, and the maintenance and ventilation of long travelling roads become serious items in the cost sheet. It may also be taken for granted that in an old colliery the general arrangements are not suited to modern machinery and modern methods of economical working. Nor is there at the present moment any inducement to spend large sums on the equipment of such a colliery; if it cannot pay dividends on the capital already invested, there is no encouragement towards putting additional capital into it. All this seems almost inevitable as collieries grow old.

With regard, however, to the second item we mentioned—the low selling price—we can not but think that for this the miners have themselves to blame to a great extent. The world's output of coal is growing rapidly, and Great Britain's production is no longer, as it used to be, the essential feature of that increase. Our continual and protracted strikes have taught—nay, have forced—other nations to develop their own coal fields, and the result is that there is no longer the keen demand that there used to be for British coal. The inevitable result of this superabundance of fuel in the world's markets is the lowness of price all round, and when prices continue low, as they have done and are doing, without any prospect of a rise, the weakest and worst-equipped collieries must close down, and once such a colliery is laid in for any length of time, the probabilities are decidedly against its being reopened.

SIR JOHN FORREST'S WATER SCHEME.

BY the last Australian mail a large budget of information has come to hand respecting the water scheme submitted to the West Australian Parliament by Sir JOHN FORREST, and already sanctioned by a large majority vote. The proportions of the proposal gain something in size when regarded more closely. A huge reservoir is to be constructed somewhere in the Darling Mountains, capable of holding 5,000,000,000 gallons of water—a content which ensures that it will be somewhat beyond the average in its dimensions. Then the fluid is to be conveyed in pipes through Southern Cross to Coolgardie—a distance of something over 300 miles. The water will flow by gravitation, and to this end a number of pumping stations are to be established along the line—presumably with reservoirs attached—for the purpose of raising the water to the necessary elevations. The engineer-in-chief, to whom may probably be ascribed the authorship of the scheme in its present form, demonstrates to his own satisfaction the practicability of the proposal by saying that it is only a combination on a larger scale of several proposals that have already been carried into effect; but this is, perhaps, hardly a conclusive method of reasoning, since it is highly probable that additional factors may enter into an engineering problem on a large scale that are almost absent from, or only present to a much smaller degree in, the same problem carried out in miniature. As to the adequacy of the proposed supply, the Government engineer meets his critics halfway by admitting that a considerable extension of the scheme may be necessary in the future. How such an extension is to be made, and whether it will not increase the difficulties inherent in an undertaking that is already difficult enough, does not appear. While the drawbacks and hazard of the Government proposals have not been allowed by the critics to remain under a bushel its merits over any other scheme which as yet has been put forward from private sources are not far to seek. In the first place, the reservoir is to be built in a locality where the rainfall is said to be at least six times the rainfall at Coolgardie. This seems to ensure a plentiful supply. The proper delivery of water at the end further from the source, moreover, is not dependent upon the integrity of the whole length of pipe. Numerous supplementary reservoirs will be built at different points along the line, which would be sufficient to sustain the supply until any breakage which might occur had been repaired. Thus in its essential parts is the water scheme as at present agreed upon, though some modifications may be introduced in detail. Its practicability is apparently beyond question, since it has been devised by the Government engineer, and since even the critics are not inclined to deny its feasibility as an engineering enterprise. That it will answer fully the expectations of those to whom its origin is due, or that it will fully meet the needs of the gold fields it is intended to serve, is, perhaps, an open question. But the proposal has received Parliamentary sanction, the work of construction, we presume, is not now far off commencement, so that it is to be sincerely hoped that it may be successfully carried into effect.

DIRECTORS AND MANAGER.

NEXT Thursday we shall look forward to a little more explanation of the unfortunate disruption which has disturbed the relationship between the directors and mine manager of the Maori Gold Mine (Limited). The position at the moment is an interesting one, and it is extremely difficult, with the evidence before us, to know upon whom we should justly throw the blame. The company, which was formed a little over twelve months ago, possesses properties at Menzies, West Australia, a district in which many promising mines are situated. A report upon this property has been made by Mr. BACKHOUSE, who estimated that the 365 tons he saw at grass contained 1970 ounces. Since then the manager has cabled to the effect that after crushing 240 tons, yielding 468 ounces, the remainder of the ore will not pay for crushing. The following extraordinary correspondence has taken place between the Board and the manager, and its reproduction will likewise serve to describe the present position of affairs:—Cable sent September 1. "What is the width of reef at 150 feet? How does it look? Reply by wire immediately." Cable received September 2. "Have driven in upon the veins for 18 feet; width, 10½ inches, visible gold. Have cleaned up; result disappointing; will send to morrow. Berdan (pans) in course of erection will be completed. I am offered £800 to crush 200 tons other parties. I estimate we shall make a profit of £500. Telegraph if I may accept. In the meantime I will develop at the lower level." Cable sent September 3rd. "Directors positively refuse to crush for any one. Crush immediately the remainder of 500 tons of ore on the dump you had when previously reported to Board on July, together with what has been raised since. Raise a daily supply of ore sufficient for the mill. Why do you not clean up according to instructions? You must obey instructions." Cable received September 5. "77 tons crushed 66 ounces. Judging by what has been done before, balance in hand (of) stone will not pay (to) crush; if (you) persist in the course of action the full responsibility devolves upon you. Under the existing circumstances the best course to adopt, I must resign. Confirm in writing." Cable sent September 7. "Your resignation is accepted by the directors. We hope to obtain successor as soon as possible; meantime please carry out the instructions of the board." It is problematical whether the board have done wisely by this precipitate behaviour, for we fail to see wherein the manager is to blame. The future, however, will decide, and meanwhile the company's career will be watched with more than ordinary interest.

THE GREAT MOUNT MORGAN.

WE have received by mail particulars of the eleventh annual meeting of the Mount Morgan Gold Mining Company, and from the documents and statements laid before the shareholders, it would appear that this wonderful mine has a long career of prosperity before it. Ever since its first discovery it has been the admiration of the world, and it is exceedingly pleasing to contemplate that the time is very far distant when it will recede from the proud position it has so long worthily held. Not a few, in its early days, looked upon it as a mountain of gold which would very soon be exhausted, but, as a result of the discoveries of recent years, there is an immense quantity of the precious metal still in reserve, indeed, much exceeding the hopes of the most sanguine. Then, again, the introduction of economies, and an improved system of ore treatment, have made it possible to treat profitably ores which otherwise would have been of no commercial value, and thus has the life of the mine been considerably prolonged. There are millions of tons of low grade ore in the mine, and though the sole treatment of these will naturally reduce the profits and the dividends, the shareholders will have no need to complain, for fortune has already granted them their fair share of blessings. The gold obtained during the year, from June 1. 1895, to May, 1896, was 139,471 ounces, of a value of £572,000, The amount distributed in dividends was £300,000, making a total of £4,100,000 since the inception of the company, representing £4 2s. per share. During the 12 months 91,597 tons of ore were treated, which is 9149 tons more than in the corresponding period. The amount of smelted gold won from the ore and the slimes treated was 139,471 ounces, as against 123,802 ounces obtained the previous year, or an increase of 15,668 ounces of gold. The average yield per ton in the past year was 1 ounce 10 dwts. 10 grains, or 10 grains in excess of the return for the previous corresponding period, which is evidence there is no deterioration in the quality of the ore treated. During the 10 years of the company's existence the quantity of ore chlorinated has been 591,643 tons, with an average yield of over 2 ounces to the ton. The total yield of smelted gold has been 1,470,486 ounces, worth £4 per ounce. It is interesting also to record that the total quantity of gold taken from the mine during this period has been 45 tons 1 cwt. 1 quarter 8 lbs. (avoirdupois), that the average money yield from each ton of stone treated has been £10 4s. 8d., the average expenditure £3 4s. 11d., and the average profit per ton £6 19s. 9d. The results, therefore, during the past year have been eminently satisfactory, and they, together with the position of the mine and the improvements constantly introduced, presage as already remarked, many years of prosperity.

MINING IN UTAH AND MONTANA.

A FEW weeks ago we had occasion to announce a marked revival of gold mining in the State of Utah, and from the evidence we gave to predict a promising future for the industry there. Since the publication of that article, the revival has been more than maintained, and evidence is daily accumulating as to the remarkable richness of the country in the precious metal. Discoveries are being announced with wonderful regularity, and excitement is becoming quite intense. Especially has it been raging over the discoveries in the Antelope mountains, where there are large ledges carrying a considerable quantity of gold and silver to the ton. It is also reported that the sand at Utah Lake has been found to contain large quantities of the former metal, though this needs further confirmation. In consequence of these repeated discoveries many abandoned mines will be reopened, and already it has been decided to commence immediately active operations at more than one. But Utah is not the only place which, of late, has set the world wagging, for our correspondent last week announced a rich and promising discovery of gold in Montana This find has naturally caused great excitement throughout the territory, perhaps unparalleled in its history, and it is the subject of animated discussion wherever mining men congregate. Unfortunately, however, too much importance is attached to these isolated discoveries. They, as a rule, startle the world for a moment, and attract thousands of adventurers from all parts, but when it is found that they do not hold out in depth and length, the disappointment caused is bitter, and hence the discovery works more harm than good. This find, we

learn, has been followed by the inevitable rush, and it is to be hoped that later news will be of a more promising character than what has up to the present come to hand.

GOLD IN FRENCH GUIANA.

ACCORDING to a commercial report from the pen of an English Goverment official in French Guiana, that colony has lately seen one of the most extraordinary instances of a gold rush chronicled in contemporary industrial annals. The report was bruited about that gold had been discovered in so convenient and easily attainable a form that the only thing necessary to possess it was the trouble and energy incidental to picking it up. Then began a most extraordinary exodus from Cayenne to the New Eldorado. The Government town was, in fact, almost deserted. Business men left their affairs to chance, and Government clerks fled precipitately from their bureaus. The original discoverer of the precious metal had intended to keep the find to a close corporation of himself and friends, but the news was of that character which made the secret very hard to keep, and consequently it soon leaked out and was noised over the whole district. It is estimated that as many as 7000 people out of a population of 11,000 left their business and made immediate pilgrimage to the golden Mecca. The whole colony, in fact, was in a state of feverish effervescence. People left for the promised land in crowds, and every sailing vessel from the port brought its knot of eager prospectors. The history of the rush is not at present complete, for we look in vain for some indication of the ultimate result of the extraordinary wave of feeling which passed over the colony. Whether the reputed gold fields will ever settle down into regular and profitable working is at present uncertain, but it would be contrary to all precedent if at least some few healthy mining enterprises were not left intact after the inevitable reaction has spent itself. As before we have hinted in our columns, Englishmen, conscious that their fellow-countrymen are in possession of the pick of the world's gold mines, can easily afford to wish well to the smaller and less robust industrial enterprises of their neighbours over the channel, and we may express the hope that in Guiana as well as in Madagascar, the French may find themselves in possession of territory rich enough in gold to be made the basis of a vigorous and remunerative mining industry.

TRADE REVIVAL AND THE BANK RATE.

THE outflow of gold which caused the rise in the Bank Rate, on the 10th inst., to 2½ per cent. may be due, to some extent, to the special requirements of foreign money markets, but it is probably also, at the same time, an indication of trade revival; and monetary and commercial circles are probably, therefore, correct in expressing general satisfaction at this unexpected breaking of the spell under which the money market has so long rested. A more cheerful tone is indeed reflected in the market reports from nearly all parts of the country. The old 2 per cent. rate has been in operation since February 22, 1894, or the longest period for which one rate has been current since the passing of the Bank Act of 1844, and even this latest change is very exceptional, every other alteration of 2 per cent. during the last 20 years having been to 3 per cent., but this half measure was probably a wise step. The markets are expecting the completion at an early date of the full rise to 3 per cent., and this fact will probably tend to keep outside quotations firmer than if the official rate had moved at once to 3, in which case the bank standard would have been so much above market rates as to, in the ordinary course, preclude any close approximation in the near future between the two. The popular assumption has usually a basis of fact, but when the Bank Rate moves up after a lengthened period of depression, it is owing to an increased demand for money in connection with the trade requirements of the country. An advance in the price of money means for the banker, the merchant, and the manufacturer more employment for their capitals and bigger profits on their turnovers. We may now expect the realisation of some of the high-priced securities in which money has been temporarily locked up by the owners pending the recovery of trade.

JULIA RE-JUVENATED.

The hearty support accorded the scheme of reconstruction, whereby the old Julia Taltal Nitrate Company has been wound up, and a new company called the New Julia formed, clearly indicates the faith the members of the old company have in the undertaking, and if, in considering the prospects of the affair, this may be taken as any criterion, then one can have no hesitation in believing that there is a very bright future before it. Thanks to the liberal manner in which the scheme was supported the whole of the debenture debt has been wiped off, and sufficient working capital provided to carry on the company for some time to come. In Mr. CHARLES BROOKING, who was formerly connected with Santa Rita, the directors have secured a very able and experienced manager, but they are acting very discreetly in deciding to have the grounds thoroughly surveyed by a gentleman well acquainted with such matters. By this means the board will be better informed as to the value and extent of the property. That the property is a rich one is highly probable, and apparently all that is required is efficient and economical management. Seeing that the directorate of the company is in such capable hands the shareholders need, however, have little to fear on that score, and there is every reason for anticipating substantial returns in the near future.

It is announced that letters of allotment in the NEW OPTIONS COMPANY (LIMITED) have been posted.

The directors of the LONDON AND SOUTH AFRICAN EXPLORATION COMPANY have declared a dividend of 4s. per share, less income tax, for the quarter ending the 30th inst., payable on and after that date.

THE MINING MARKET.

FRIDAY EVENING.

Another unsatisfactory week's business.—Kaffirs rather better at the close.—General shrinkage in West Australians.

THE Stock Exchange continues in a decidedly stupid condition. The public is standing aloof, and dealers are doing their best to get prices down, the majority of them having planted little "bears" of one stock or another. The "dear money" bogey has been trotted out for all that it is worth, and the unsettled state of affairs in Turkey has been made responsible for the wildest rumours of an alarmist nature. Up to the present the refutation of the more ridiculous of the *canards* has not been succeeded by more than momentary rallies. There seems to be no one to lead the campaign against the "bears." They are in possession of the field, and for the moment are having things all their own way. It does not appear that the public has been playing into their hands to any great extent by selling and delivering blocks of stock, but there has been little resistance to the marking down of prices. The Mining Market, or, at any rate, the South African portion of it, is waiting upon British Consols. These had a heavy break on Saturday, from which there was practically no recovery up to Thursday morning. Operators for the fall were noisy enough with their predictions of what would happen when the Bank directors once more raised the Bank Rate. When, a few minutes before noon, the announcement was made in the House that the rate would remain unaltered for another week, there was a mighty cheer, and a brief rush of prices, but when the spurt was not succeeded by continued support, "bears" regained confidence, and quickly put things flat again. Thursday was a Jewish fast, and many of the leading operators were conspicuous by their absence. Since their return to business this morning, markets generally are a shade harder, and the bears are less aggressive, but there is only the smallest possible quantity of business doing, the uncertainty of the political situation being put forward as a pretext for inactivity. The big men on this side explain their lack of enthusiasm by pointing out that on the two or three successive occasions when they have made a start in the direction of bidding prices up, they have instantly been swamped by heavy sales from Paris. If this statement is true, one can understand their hesitation in forcing the pace. Indeed, there is little temptation for them to undertake any engineering. Dulness is in the air, and there is nothing to be done but to bide the clearing of the atmosphere. It may be noted that the Settlement was brought to a close on Wednesday without the disclosure of any difficulties, a sufficient indication of the smallness of the speculative account.

South Africans.

The widely advertised anticipation that cantango rates would rule heavier in consequence of the rise in the Bank rate, was not borne out by results. Charges on Saturday last were very much the same as they had been at the two or three preceding Settlements. It is difficult, indeed, to see how they could have been otherwise, bearing in mind that the 7 or 8 per cent. normal interest obtained by lenders has never been regulated by the 2 per cent. discount rate quoted by the Bank of England. As it was, the general charge on gold shares ranged from 6 to 9 per cent. Chartered were carried over at about 2d. contango, whilst the existence of a small bear account in East Rands was evidenced by the light rate charged. On De Beers half-a-crown and upwards was paid, and some difficulty was experienced in carrying over Rand mines. East Rands, as having perhaps the freest market, owing to its International character, have been subjected to several determined attacks by the "bear" party. Although the price has been driven down to the neighbourhood of 6¾ on two or three occasions, the shares have displayed plenty of elasticity, and after changing hands at 7½ immediately after the carry over, they closed ⅞ down on balance at 7⅛. Anglo-French Explorations have not benefited by the declaration of the 15 per cent. dividend, and are also ⅞ lower at 4¹⁵⁄₁₆. Angelo and Comet are both slightly easier at 4¾ and 2⅛ respectively. Some lengthy explanations have been in circulation as to the reasons for the unsatisfactory working returns of the Geldenhuis Deep. These, however, have not prevented the loss of ½ in the shares at 5½. Rand Mines have been sold, partly in consequence of the difficulty experienced in carrying them over. They close 1⅜ down at 29½. Small losses are shown in other Deep Level shares, as, for example, Consolidated at 5½, Roodepoort Deep at 2½, Nourse Deep at 5½, and Nigel Deep at 1¾. Consolidated Goldfields Deferred were made up for the Settlement at 13½, but in the early part of the week they dipped to 12½, and are finally ⅛ down on balance at 12¹⁵⁄₁₆. Amongst the worst sufferers in the little slump were Gold Fields Deep, which close 1¼ lower at 10½. Gold Trusts have lost ⅞ at 8½. Chartered slipped back to 3 early in the week, and close ⅛ down at 3¹⁄₁₆, having fluctuated within only the narrowest compass. Exploring Land and Minerals at 1½, Hendersons at 2⅜, Mashonaland Agency at 2⅛, New Africans at 3½, and Willoughby Consols at 1½, are all ¼ down on the week, whilst Rhodesia Exploring has lost ½ at 6½. Oceanas have sagged away to 1⅛, Klerksdorps to 14s., and Potchefstrooms to ⅝. Beyond this little list prices are to a large extent nominal, so far as Land and Exploration companies are concerned. The Barnato group has been rather out of favour, the proposed amalgamation having given rise to a good deal of criticism. Johnny's Investments were at one time down to 3⅛, which is some bit below the price at which Messrs. Barnato Brothers have guaranteed the new issue. The clique, however, has been supporting the market to-day, hoisting the price of Johnny's to 3¼, whilst Banks which had relapsed to 2, are finally ¼ down at 2⅛. Barnato Consols have lost ⅛ at 2⅜, whilst Buffelsdorn are ⅛ better at the same figure. New Primrose have been specially flat to-day, and close ⅜ down at 5⅛, whilst losses of ¼ or so are shown in Glencairn at 3⅛, Kimberley Roodepoort at 2⅛, Langlaagte Royal at 2⅛, and George Goch at 2¼. The Robinson group has been quiet, Randfonteins are finally ⅛ down at 2¾, and North Randfontein have lost ¼ at 2⅛, but Langlaagte Estates are unchanged at 5⅛. Most of the Eckstein shares are down, but the loss is not more than ¼ in any one case. Citys have dropped to 4⅞, Ferreira to 19¾, Geldenhuis to 3⅜, Henry Nourse to 6⅛, Jubilee to 9, Jumpers to 6⅝, Modders to 6⅜, Nigel to 3, Salisbury to 4, Simmer and Jack to 6½, and Wemmer to 8⅜. One of the most sensational movements of the week has been in the shares of the African Gold Recovery Company. On Saturday these were stagnant at 35s. They advanced to 38s. on Monday and on Tuesday had an excited rise to £3, subsequently reacting to under 50s. The cause of this sensational movement was the publication of a telegram reporting a decision of the Transvaal High Court, establishing the validity of the company's cyanide patents. The fall was brought about by the denial by the company of any such decision having been given. Up to the present, it is not easy to decide which side has been prevaricating. Knights and Durban Roodeport are both marked down half a point to 6¾, though in the case of the latter allowance must be made for a 3s. dividend. Orions have been very flat, losing ¼ at ⅛, whilst Minervas are in even worse plight at ⅝. A big return from the Robinson Mine has not prevented a small shrinkage in the shares at 8⅜, and unimportant reductions are shown in Aurora at 1⅜, Bantje at 3⅞, Chimes at 1¼, Kleinfontein at 3⅛, Sheba at 2, Stoyne Estate and Concessions both at 1⅛, Transvaal Gold at 7⅛, Van Ryn at Tati 4⅞, Village Main Reef at 6⅞, Vogelstruis at 4⅜, and Wolhuter at 6⅜. The Lydenburg group is easier, Balkis being quoted at 5s. 3d., Barretts at 14s. 6d., Graskops at 5s., and Lisbons at 6s. Spitzkops have fallen ⅛ to 1⅛. There has been less excitement in diamond shares, but De Beers have lost ⅞ at 29⅛, and Jagers ⅞ at 9⅛.

West Australians.

In this market again there was no special increase in the Contangos charged. Dealers were no more anxious than usual to continue bargains, but where they did so, they were satisfied with 8 to 10 per cent. The differences to be adjusted were slightly in favour of sellers on the whole, though there were several appreciable gains which served to equalise the balance. There is no mistaking the attitude of dealers in the Westralians at the present moment. They are uncompromisingly hostile to any improvement in prices, and the burden of their conversation points unmistakably to the fact of their being bears to a man. This is a bad look out for holders of non-productive shares. Prices have been crumbling away for some time past, and the market gets more and more restricted. This week shows greater shrinkage than has been recorded in any one week for some time previously. Shares of all classes have met with the same fate, the sole exception being the little group manipulated by the redoubtable Mr. Bottomley. His Joint Stock Trusts have been worked up nearly 10s. to 4 premium, the wide publication of an optimist report aiding in the movement. Associated have kept comparatively hard, being only ⅛ down at 3⅞, whilst Associated Southern are actually ⅛ up at 1¾, Brownhills have ¼ at 5¾, and Great Boulders ¼ at 7. The falling off in the crushing return—2338 ounces from 668 tons—is explained by the fact that only the stone which was put through the company's own battery is included in the return. Hannan's Proprietary has lost ⅜ at 1¹³⁄₁₆, Hannan's Star ¼ at 1⅞, Lake View Consolidated ⅜ at 7⅛, Lake View South ⅜ at 2⅛, Boulder Main Reef ¼ at 1⅛, Croesus South United ¼ at 1, Golden Horseshoe ⅛ at 1⅛, and Coolgardie Mint and Iron King ¼ at 1⅞. True Blues are rapidly drifting to rubbish prices, being ⅛ down at ⅜. A determined attack was made on Lady Lochs, which fell at one time to 2. There has since been a recovery to 2½, which leaves them ¼ down. The Menzies Group has been particularly flat. Lady Shenton has lost ⅜ at 2, and Florence ⅛ at 1⅛. White Feathers are ⅛ down at 1¹³⁄₁₆. Golden Crowns have lost ⅛ at 1⅞, and Hit or Miss ¼ at 2⅛. A reduction of no less than £1 is shown in Ramage Syndicate at 3⅞, whilst Black Flags at 1⅝ and Golden Plums at 1⅛ are both ¼ down. A significant fall is that of 1⅛ in West Australian Goldfields at 7⅜. Hampton Plains have yielded ¼ at 3⅛, Mainland Consols ⅛ at 2⅜, Colonial Finance ¼ at 3⅜, and Shaw Corporation ⅛ at 1⅛. This is a sufficiently depressing record of universal loss, but it might be extended indefinitely were the whole market traversed.

Miscellaneous.

There has been very little doing in the securities which are classified under this head. In the general dulness prices have been fairly well maintained, but for this apathy is as much responsible as any active support. In Copper Shares losses of ⅛ are shown in Rio Tinto at 23⅛ and Anacondas at 6⅜, though in each case there has been a recovery from lower prices. Broken Hills are unchanged at 2⅛, Mount Morgans slightly easier at 3⅞, and Mount Lyells ⅜ down at 8⅜. Alaska Mexican has improved ¼ to 1⅛, and Treadwells ⅛ to 5⅛. Wentworths are down ⅛ at ⅛, with Aladdin the turn easier at 2⅛. The falling off in the volume of business is reported by the dealers in Indian gold shares. Mysores are a shade harder at 8⅛, but Champion Reefs have lost ¼ at 7⅛, and Nundydroog at 3¼, and Ooregum at 3⅛ are both a like fraction lower. Kapangas have hardened to 14s. 3d., and Hauraki is unchanged at 18s., but other movements in the New Zealand Group have been in the direction of lower prices. Waihi has lost ¼ at 6⅛, as have Waitekauri at 4⅛. The most important decline, however, is ½ in Taitapu at 3.

STOCK EXCHANGE SETTLING DAYS.

CONSOLS.

Thursday, October 1.

MINING MAKING-UP DAYS:
Saturday, September 26. | Monday, October 12.

MINING NAME DAYS:
Monday, September 28. | Tuesday, October 13.

ACCOUNT DAYS:
Wednesday, September 30. | Thursday, October 15.

"THE NEW SATURDAY."—Mr. Horace Whitcomb's new weekly journal has made its first appearance, and if subsequent issues maintain the high standard of excellence which distinguishes its inception, we have little doubt that it will meet with that success which the carrying out of its high aims will deserve. Mr. Whitcomb's severance from the *Saturday Review* caused great surprise, and gave rise to much regret. In the present number he gives, in the way of personal explanation, the story of the incidents which led to his resignation. For our own part, we cannot but wish the new organ the prosperity which it undoubtedly merits.

THE annual ordinary general meeting of the Rand Central Electric Works (Limited) will be held at Winchester House, Old Broad-street, London, E.C., on Thursday, September 24, at 12 o'clock noon.

The transfer books of the MAIN REEF GOLD MINING COMPANY (LIMITED) will finally close on Saturday next, September 19.

HANNAN'S KING (Brownhill).—The secretary has forwarded the following letter to the shareholders: The board direct me to inform the shareholders that Mr. A. G. Burge, the well-known Coolgardie mining engineer, has been specially appointed by them to take charge of the company's property at Kalgoorlie, and he is expected to arrive on the mine within the next fortnight. The local manager at Perth writes under date, August 14—letter received here September 15: The reports from the mine manager on the company's property at Kalgoorlie confirm previous cables and are very satisfactory. No. 2 shaft is now 95 feet down on the same formation. A sample taken from the hard red clay met with in this shaft gave an assay of 3 per cent. gold. This being so phenomenally rich, I have telegraphed for confirmation and will send reply.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

ACHILLES GOLD FIELDS.—The following cablegram has been received from the managing director at the mine:—"Are crushing at the rate of 50 tons per day. Can supply stamps till October. Good quality."

ASSOCIATED SOUTHERN.—Cablegram from Mr. George Gray, C.E., dated Kalgoorlie, September 14:—"Trafalgar is opening up splendidly; fully expect to be ready floating 30 days."

APPANTOO GOLD.—During the month of August mill crushed 297 tons quartz, yielded 165 ounces of gold. Consider situation greatly improved.

BROKEN HILL PROPRIETARY.—The London office have received a cable from Melbourne, which states the price of the shares there as £2 9s. buyers.

BROKEN HILL PROPRIETARY.—A cable states that 32,562 tons ore were treated for four weeks ending 17th inst., and the output from refinery was 450 ounces gold, 496,784 ounces silver, 1224 tons lead, 22 tons antimonial lead, and 179 tons matte, containing 38 tons copper, and 31,415 ounces silver. Buyers' quotation in Melbourne for Broken Hill Proprietary Company shares on 18th inst. was £2 9s.

BRILLIANT AND ST. GEORGE UNITED. — Cablegram from the directors of this company:—"Have crushed during the month 2619 tons of quartz for 3801 ounces of gold, approximate value £12,425. Have declared a dividend for the month of 9d. per share, payable on September 22."

CAYLOMA SILVER.—A cable has been received from the manager at the mines reporting August production:—"18,000 ounces fine silver in export ores and 10,000 ounces fine silver in bullion."

CASSEL COAL.—A cablegram just received gives the output for the month of August as 28,738 tons; profit, £6125.

DARIEN.—The directors have received the following cablegram from the mine:—"Crushed 645 tons, obtained 660 ounces of gold.—Woakes."

EJUDINA GOLD.—The London office have received the following cable:—"Ejudina. From the shaft No. 3 crushed 48 tons, obtained 113 ounces of gold tailings estimated more than an ounce."

FRONTINO AND BOLIVIA.—The statement for the month of July is as follows:—Estimated value of gold and sulphurets, £6101 5s. 4d.; estimated cost, £6039 13s. 4d.; estimated profit, £61 12s. The directors have received a cablegram from Mr. Penberthy to the following effect:—"Estimated produce of August, £9590; estimated cost, £5550; estimated profit, £4040. Mines are looking better."

GRAND CENTRAL.—A cable has been received from the mines, stating that 3125 tons were crushed in August, producing $130,000 gold, and that the expenses for that period were estimated at $40,000 gold.

GELDENHUIS DEEP. — The following cable has been received referring to the August return:—"Costs unusually high on account of very considerable expense in the underground workings opening for new stamps and six months' charges, £1600, insurance and all extra expenses. Cyanide precipitation not at all satisfactory since starting. We are preparing electric process. Solutions show that should have been 500 ounces more last month; we were unable to extract."

GOLCONDA GOLD.—A cablegram has been received from the mine manager stating that he has struck a flow of water in the new well, and will telegraph immediately he can determine the quantity.

GREAT BOULDER PROPRIETARY.—Crushing returns for the fortnight ending September 14:—At the company's own battery, Great Boulder Mine (20 stamps), crushed 668 tons, yielding 2338 ounces.

HAURAKI.—The directors have received the following cable from the manager, viz:—"Total amount crushed (four weeks) is 412 tons; ounces of gold, 2039; approximate cost, £1750; profit, £4500. The crosscut at the 360 is 38 feet. Expect to strike reef shortly."

HARQUAHALA.—Cabled result of tailings treated at Harquahala (Arizona) for the month of August:—"4197 tons of tailings treated; bullion yielded $11,812; expense on revenue account, $6550; profit for month, $5262 (at $4·90 to £ sterling) £1074."

HANNAN'S BROWNHILL. — A cable has been received stating that 214 tons (of 2240 lbs.) crushed in the public mill yielded 836 ounces of gold, the tailings assaying 34 dwts. per ton.

HANNAN'S NORTH GOLD.—Messrs. Bowes Scott and Co. cabled on September 16:—"Crushed further 30 tons, yielded retorted gold 55 ounces."

HOLCOMB VALLEY.—Referring to the California Mine the manager cables as follows:—"We have found good ore at California."

IVANHOE.—The London office have received the following cablegram from Melbourne, dated September 16:—"Struck a very rich body of ore September 14, in 200 feet level, water shaft. The stone is worth 100 ounces per ton."

KABOONGA.—Bore hole 22 feet, total to date 7 dwts.; double the quantity elsewhere; very rich. Two additional bore holes right through 19 feet and 20 feet; quite satisfactory prospects; push ahead with bottom level; we can easily keep the water under.

KATHLEEN CROWN.—The directors have received the following cablegram from the manager, viz:—"Shaft has been sunk 17 feet for the month; rock in the shaft very hard. Surface indications most encouraging."

KALGOORLIE CONSOLS.—A cablegram has been received from the mine manager stating "lode at 140 feet; 17 feet in width. Prospects very fair."

KATHLEEN.—The directors have received the following cablegram from the manager—viz.:—"Main shaft is down 182 feet. Country rock is favourable in the crosscut."

KAPANGA.—The directors have received the following cable from the manager—viz.:—"Cutting out chamber at the bottom of the shaft. Shall open out at the 940 and 1000 next week, when you can anticipate very important news.—Corby. The reef shows signs of improvement."

LE CHAMP D'OR FRENCH.—The following cable has been received from the manager of the mine at Johannesburg:—"During the month of August the mill worked 28 days, crushed 7100 tons, yielding 2603 ounces; cyanide treated 5400 tons, yielding 1095 ounces; total 3698 ounces."

MAUNDER MACVEAN SYNDICATE. — Cable from Coolgardie:—"Wangine. The property has again been inspected by Mr. Gordon. The assays show 7 ounces to the ton." The above refers to the Wangine (Siberia) Reward Claim and adjoining leases recently acquired by the syndicate.

MAY CONSOLIDATED. — The following cable message, dated Johannesburg, September 12, has been received:—"The profit for the past month (August) was £4538."

MILLS' DAY DAWN UNITED.—Cablegram from Charters Towers:—"Have crushed during the month 460 tons of quartz for 410 ounces of gold. The approximate value of this return is £1415."

MOUNT REID.—The company is in receipt of the following cable from the secretary to the colonial board:—"Have just come up from the mine. The mine looks exceedingly well. The present width of sulphide is 30 feet solid."

MOUNT HEPBURN.—The following cable has been received from the manager:—"Driving in both directions, following the course of the vein, 50 feet wide. Assays made of the vein matter give—north 19 dwts. per ton, and south 26 dwts. per ton, 15 dwts. and 11 dwts. per ton."

NEW CHIMES.—The result of last month's crushing yielded 1760 ounces of gold.

NEW QUEEN.—The following cablegram, dated Charters Towers, September 12, has been received:—"Have re-commenced driving east No. 5 formation. Have drawn upon you for £500; water troublesome. Sunk straight shaft during fortnight 35 feet."

NEW ZEALAND CROWN.—The bullion produced in June has been sold in London for £2265 from 472 tons, which gives a value of £4 15s. 11d. per ton.

NEW ZEALAND TALISMAN.—The following cablegram has been received from the manager at the mines:—"The width of the vein on the No. 5 level has improved to 2 feet 6 inches; assay value of ore from £5 to £7 per ton. This is a second chute of ore. Report of crushing from mine, 285 tons, £1461, equivalent to £5 2s. 6d. per ton."

NORTH BOULDER.—Telegraphic advice has been received from the local director in Kalgoorlie that the mill is in first-class order that large supplies of high grade ore are in sight, and that there is a good flow of water.

QUEEN CROSS REEF.—We have received the following cablegram from head office at Charters Towers, dated 16th inst.:—"Dividend declared of 6d. per share, payable September 22, carrying forward a balance of £2000 after payment of this dividend."

SIMMER AND JACK.—Cable advices state that this company have crushed 13,710 tons, obtained 5499 ounces; gold from mill, 603 ounces by chlorination, and 2228 ounces from tailings by cyanide during the month.

SHEBA.—The following cablegram has been received from the general manager:—"From the scarcity of water, running 35 stamps. The stopes are looking better."

ST. JOHN DEL REY.—The following telegram has been received from Mr. Chalmers:—"Produce 10 days first division September, 12,000 oits., equal to 1383 ounces troy, value £4650. Yield per ton 5·5 oits., ·63 ounces troy."

TREASURY.—Profit for August, £1467.

TALISMAN.—The following is a cable from company's representative at Perth, W.A., dated September 17:—"Started the machinery on September 16, everything working well."

TAITAPU GOLD ESTATES.—The board having received a cablegram, dated August 31, from Mr. James Coutts, the mine manager, who recently left Auckland to take up the superintendence of this company's property, recommending the erection of a 20 head stamp battery at the Golden Ridge Mine, belonging to the company, a 20 head stamp battery has been ordered from Messrs. Fraser and Chalmers (Limited), which will be sent out and erected as quickly as possible.

VICTORIA GOLD MINING ASSOCIATION.—The following cablegram has been received at the London office:—"276 tons crushed yielded 370 ounces gold."

VICTORIA AND QUEEN.—Messrs. A. Durant and Co., the London agents, have received a cablegram from the head office in Charters Towers, dated September 17:—"Have crushed 270 tons for 644 ounces of gold, approximate value £2200. This is only a partial clean up."

WATER TRUST MINING AND PUBLIC CRUSHING COMPANY OF WESTERN AUSTRALIA.—The following cablegram is to hand from Mr. Carl Hesse, general manager of the company at Northam:—"The returns we have received. New Victoria south mine 95 tons weight of bar 144 ounces, average sample of tailings 13 dwts. per ton; blankets, weight 6 tons 3 ounces 15 dwts. per ton."—Office Note. It is believed that 6 tons of the richest ore was selected and sent away, and was not included in the above crushing. The following is extracted from a report, dated August 6, received by the company from Mr. Carl Hesse:—"New Victoria South. Have taken possession of Victoria; the mine looks splendid; shall have about 100 tons of quartz ore crushed in the local mill. The mine workings in shaft No. 1 look very well indeed, and I will continue them with all possible speed. In No. 1 shaft the 35 feet level west is about 28 feet in, and the lode has divided here into two branches, a foot wall reef showing already about 10 feet quartz, carrying good gold, and a hanging wall reef about 2 feet wide, rich in gold. The 80 feet level west has advanced 30 feet since my last visit, showing a large lode formation with a quartz vein of about 18 inches thick in it, where free gold can be seen without any trouble all along the drive.—Shaft in block 2877. This shaft is at present 40 feet deep, and has a quartz lode about 18 inches wide, showing coarse gold.—Shaft in block 2609. At 65 feet a drive north-west has been run 65 feet, showing a well-defined lode of quartz, some of it of a yellowish appearance with fine gold shining through the quartz. In block 2827 and 2828 several reefs are exposed with costeans, all showing more or less free gold."

WAIHI GRAND JUNCTION.—The manager cables, September 18:—"Grand Junction engine shaft is down 474 feet. Waihi west prospecting shaft, south drive 387 feet."

WEMMER.—The profit on work done during August is advised by cable as £8060.

WESTERN AUSTRALIAN DEVELOPMENT CORPORATION.—M'Kenzie, Mr. Frank Nicolas has cabled that the fourth crushing of the Glenloth Mine is now taking place. The result of the last crushing will be announced as soon as the retorted gold has been secured. The gold amalgam amounts to 19 lbs., and Mr. Nicolas anticipates that the yield will be 27 dwts. to the ton, with 15 dwts. left in the tailings, making a total return of 2 ounces 3 dwts. to the ton.

WENTWORTH GOLD FIELDS PROPRIETARY.—The following cablegram has been received from the superintendent at the mines:—"Five weeks' returns total 1123 ounces of gold (approximate value, £4120)—namely, 1000 tons of ore have been crushed, yielding 1055 ounces, and 3 tons rich crude ore have been shipped, containing 68 ounces.

THE share transfer books of the Great Boulder No. 1 (Limited) will be closed from September 21 to October 3 inclusive, for the purposes of the statutory meeting, to be held at Winchester House on September 24, at two p.m.

MR. JAMES REID notifies that he has resigned his position as Chairman and director of the Randt Gold Mining Company (Limited).

MR. ALFRED BULL notifies that he has resigned his position as a director of the Randt Gold Mining Company (Limited) and of the Apollo (Black Reef) Gold Mining Company (Limited).

The LAUTARO NITRATE COMPANY (LIMITED) notifies that the coupons of the 5 per cent. debentures due October 1 will be paid by the City Bank (Limited), 5, Threadneedle-street. Coupons must be left three clear days for examination.

THE METAL MARKETS.

THE METAL MARKET, LONDON, SEPTEMBER 18,

Copper.

THE market opened easier at £47 12s. 6d. s.c., but moderate buying caused an advance in values, spot rising to £48, whilst for an October date £48 1s. 3d, was paid. The increase in the visible supplies shown by the fortnightly statistics discouraged operators, and values receded, until on Thursday £47 15s. was accepted for three months. The transactions for the first four days averaged about 700 tons per day. To-day's market was firmer, with transactions amounting to about 700 tons, whilst the value improved to £48 three months, the market closing, however, easier again at £47 17s. 6d. s.c. and three months.

Tin

The continuance of large shipments from the Straits, due to the weakness of silver, has been the principal cause of the feeble support given of late to this article, which opened 7s. 6d. lower at £58 5s. s.c., £57 17s. 6d., s.c. and £58 11s. 3d. three months being accepted later in the day. From that point the value recovered slowly, assisted by the rally in silver—£58 10s s.c. and £59 three months were recorded on Thursday. The daily transactions averaged about 200 tons daily. To-day's business amounted to about 150 tons at £58 11s. 3d s.c. and £59 1s. 3d. three months, and the two positions closed, respectively, at £58 8s. 9d. to £58 10s. and £59 to £59 2s. 6d. in quiet tendency. In the Dutch market values have improved slightly, the closing prices this morning—viz., 35⅜ fl. s.c. and 35⅝ fl. three months being ¼ fl. above the opening figures for Billiton. Banca is quoted at 35⅜ fl, s.c.

Pig Iron.

Last week's shipments from Scotland were advised as 5800 tons, or 2500 tons less than in the parallel period of last year. Cash Scotch opened in Glasgow at 46s. 3d. s.c., and declined to 46s. 1d., improving again on Tuesday to 46s. 4½d., and on Wednesday to 46s. 5d. Then came a relapse to 46s. 2½., followed, on Friday, by a recovery to 46s. 3½. The market closed with sellers at 46s. 2½ d. s.c., and 46s. 4½d. a month, and with hematite at 47s. 2d., and Middlesborough at 38s. 2d.

Lead

has continued to improve. In American, production has been restricted by strikes, and holders, generally speaking, are firm in their ideas. The close is at £11 3s. 9d. to £11 5s. soft foreign, and £11 5s. to £11 7s. 6d. English.

Spelter.

Pressure of sales, together with almost complete neglect on the part of consumers and dealers, caused a fresh collapse of values, but the close is rather firmer in tone at £16 to £16 2s. 6d. ordinaries, and £16 7s. 6d. to £16 10s. specials.

Antimony

is quiet at £29 to £29 10s.

Quicksilver

is steady and unchanged at £6 10s. firsts, and £6 9s. seconds.

The following are to-night's (September 18) prices of metals:—

	£	s.	d.		£	s.	d.
Copper							
Tough cake and ingot	47	10	0	.....	50	10	0
Best selected	50	0	0	.....	51	0	0
Electrolytic Copper	51	5	0	.....	53	5	0
Sheets and sheathing		—		.....	58	10	0
Flat bottoms		—		.....	61	10	0
Chili bars, spot, & 3 months respectively	47	17	6	.....	47	17	6
Copper tubes, seamless		—		.....	0	0	8½
Alloys							
BRASS: Wire		—		.....	0	0	6
" Tubes (solid drawn)		—		.....	0	0	7
" Sheets		—		.....	0	0	6¾
PHOSPHOR BRONZE: Alloys II., III., or VII., XI., Cog Wheel Brand		—		.....	81	0	0
" "		—		.....	83	0	0
" "		—		.....	78	0	0
" " Vulcan brand A1		—		.....	72	0	0
DURO METAL		—		.....	73	0	0
BULL'S METAL		—		.....	65	0	0
Ferrobronze (Vivian's)							
Ingots, per lb.	0	0	6¾	.....		—	
Ordinary sheets, plates, bolts and bars	0	0	7	.....		—	
Screw bolts and nuts	0	0	8½	.....		—	
Pump rods, plain	0	0	7½	.....		—	
" finished	0	0	10½	.....		—	
DELTA METAL: No. 4 (per ton)		—		.....		—	
" Sheets and plates (per lb.)		—		.....		—	
" Bars, round, square, flat (per lb.)		—		.....		—	
" " hexagon (per lb.)		—		.....	78	0	0
Tin							
English, ingots, f.o.b.	62	5	0	.....	62	10	0
" bars	£3	5	0	.....	63	10	0
" refined	64	5	0	.....	64	15	0
Straits, spot, and three months respectively	58	17	6	.....	59	2	6
Australian, spot, and three months respectively	59	7	6	.....	60	0	0
Banca " (in Holland)	60	2	6	.....	60	3	9
TIN PLATES; Charcoal, best quality per box	0	14	0	.....	0	14	6
" " ordinary	0	11	0	.....	0	13	6
" Coke, best quality	0	10	3	.....	0	10	9
" " ordinary	0	9	7½	.....	0	9	9

These prices of tinplates are f.o.b. at Swansea; at Liverpool 6d. per box more.

Iron							
Pig, G.M.B., f.o.b., Clyde, spot		—		.....	2	6	3½
" Scotch pig, No. 1 Gartsherrie		—		.....	2	13	3
" " Coltness		—		.....	2	12	6
" " Clyde		—		.....	2	9	0
" " Govan		—		.....	2	7	6
Bars, Welsh, f.o.b. Wales		—		.....	5	10	0
Plates " "		—		.....	6	10	0
Bars, Staffordshire, at works		—		.....	6	10	0
Sheets " "		—		.....	6	15	0
Plates " "		—		.....	6	10	0
Hoops " "		—		.....	6	15	0
Ship plates, Middlesborough		—		.....		—	
STEEL: English spring		—		.....	12	10	0
" " cast		—		.....	42	0	0
" Rails at works, according to section	4	5	0	.....	5	15	0
Lead							
Spanish or soft foreign	11	3	9	.....	11	5	0
English pig, common	11	5	0	.....	11	7	6
" L.B.		—		.....	11	15	0
" sheet and bar lead		—		.....	12	5	0
" pipe		—		.....	12	15	0
" red		—		.....	14	0	0
" white		—		.....	17	10	0
" patent shot		—		.....	14	15	0
Spelter							
Silesian ordinary brands	16	0	0	.....	16	2	6
" special brands	16	7	6	.....	16	10	0
English Swansea	16	17	6	.....	17	0	0
Sheet Zinc	19	0	0	.....	19	5	0
Antimony							
Antimony	29	0	0	.....	29	10	0
Quicksilver							
Flasks, 75 lbs. warrants	6	9	0	.....	6	10	0
Ore, c.i.f., U.K. ports	**Manganese**				per unit.		
1st quality, 50 per cent. and upwards	0	0	11	.....	0	1	1
2nd " 47 per cent. to 50 per cent.	0	0	10	.....	0	1	0
3rd " 40 " 47 per cent.	0	0	9	.....	0	0	11
Aluminium	Per lb.				Per lb.		
98-99¼ per cent.	0	1	4¾	.....	0	1	6
Nickel							
98-99 per cent. guaranteed	0	1	2	.....	0	1	4

The directors of the COOLGARDIE GOLD SYNDICATE (LIMITED) (SHERLAW'S) have declared an interim dividend of 25 per cent., less income tax. This is at the rate of 100 per cent. per annum on the paid up capital of the company, as from the quarter, commencing July 1 last, such dividend to be payable on and after October 24.

The ANGLO-FRENCH EXPLORATION COMPANY have declared an interim dividend of 15 per cent. on the ordinary shares.

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bx*, Borax; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron; *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver; *R*, Ruby; *S*, Silver; *S-l*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "Amount of Share" column of British Mines signifies that the mine is conducted on "Cost Book" principles; ‡ in the "Head Office" column of African Mines signifies that the address given is not that of the head office but of a sub, or transfer office; and †, following the names of African Mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

*** The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share Dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that while our Share List will almost invariably be found correct, we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.

AFRICAN MINES.

Name.	Closing Price, Sept. 18, 1896	Closing Price Sept. 11, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
			£		£ s. d.			
Abbott's Con. Reefs	6/ 7/	6/ 7/	1 0	—	1 0 0	—	De Kaap	Broad Street Avenue
Adler Consolidated	1⅜ 1⅛	1⅜ 1⅛	1 0	—	1 0 0	250,000	Transvaal.	1, Moorgate place.
African Estates......	1⅜ 1⅝	1 9/16 1 11/16	1 0	2/& rtsOc.16 95	1 0 0	438,000	De Kaap...	3, Copthall-buildings
„ Gold Rcvry.	2⅛ 2⅜	1 13/16 1 15/16	1 0	rts Oct 30 '95	1 0 0	175,000	—	23, College Hill,
Afrikander ...... G	1⅝ 1⅞	1¾ 1⅞	1 0	rts May 24 '95	1 0 0	40,000	Transvaal.	23, College Hill
Alexandra Estate G	⅝ ¾	11/16 13/16	1 0	—	1 0 0	225,000	Rand	15, George street
Angelo	4⅝ 4⅞	4⅝ 4⅞	1 0	—	1 0 0	175,000	—	Winchester House
Anglo-French Exp.	4⅞ 5	5 1/16 5 3/16xr	5 0	rts Aug. 28 '96	5 0 0	30,300	S. Africa	3, Princes street
„ Matabeleland	1¾ 2¼	1¾ 2¼	1 0	—	1 0 0	39,750	Matabld.	Winchester House.
Appantoo .... G	—	—	1 0	—	1 0 0	77,885	West Cost	Dashwood House.
Aurora .... G	1¼ 1¼	1⅜ 1⅝	1 0	5% Mar.,'93	1 0 0	65,000	Rand	8, Old Jewry.‡
„ West United.	1½ 1¾	1⅛ 1¼	1 0	—	1 0 0	100,000	„	7, Lothbury
Balkis Eersteling G	1/ 1/6	1/ 1/6	10/	—	0 10 0	520,000	Transvaal	85, Gracechurch-st.
„ Land	5/ 5/6	5/9 6/3	10/	1/ Feb. 13, '96	0 0 0	520,000	„	„
Fautjes Consol ... G	3 3⅛	3⅝ 3¾	1 0	rts Sep 24 '95	1 0 0	83,000	„	15, Geo. st., Mn Ho.
Barnato Bank	2 1/16 2 3/16	2 3/16 2 5/16	1 0	—	1 0 0	2,625,000	—	7, Lothbury
„ Consol ...	2 13/16 2 15/16	2⅞ 3	1 0	—	1 0 0	1,000,000	—	„
Barrett.......... G	13/ 14/	15/ 16/	10/	—	0 9 0	407,496	De Kaap	17, Basinghall-street
Bechuanaland Exp.	1 7/16 1 9/16	1 9/16 1 11/16	1 0	rts Jy 24 '95	1 0 0	400,000	Bechuana.	19, St. Swithin's-lane
„ Trad g Assoc.	1⅛ 1⅜	1⅛ 1⅜	1 0	1/6 July 15,'96	0 10 0	91,307	„	72, Basinghall street
Big Golden Quarry	/6 1/	/6 1/	5/-	—	0 5 0	483,226	Kaap Rivr	Warnford Court,
Block "B" Lang.	1 11/16 1 13/16	1¾ 1⅞	1 0	—	1 0 0	535,000	Rand	5, Princes-st., E.C.‡
Bonanza	3 3⅛	3 1/16 3 3/16	1 0	—	1 0 0	200,000	Turffont'n	120, Bishopsgate-st.
Brit. S. A. Char. ..	3¼ 3⅜	3 3/16 3 5/16	1 0	rts Jy 26 '95	1 0 0	,999,750	S. Africa	15, St. Swithin's-lane
Buffelsdoorn...... G	2 13/16 2 15/16	2¾ 2⅞	1	16/- Nv. 28 '95	1 0 0	250,000	Potchefstr	7, Lothbury.
„ Central	⅛ ¾	⅛ ¾	1 0	—	1 0 0	—	—	8, Old Jewry
„ Consolidated	11/16 13/16	13/16 15/16	1 0	—	1 0 0	225,000	—	Warnford Court
Cape Asbestos	¾ 1	¾ ⅞	1 0	—	1 0 0	50,311	Orange Rv	19, St. Swithin's-lane
„ Copper C	2 5/16 2 7/16	2¼ 2⅜	2 0	2/ June 12, '96	2 0 0	300,000	Cape Col.	9, Queen-street-place,
„ 6% Pref. ...	2⅝ 2⅞	2⅝ 2⅞	2 0	2/ June 12, '96	2 0 0	45,000	„	„
Cassel Coal............	1 15/16 2 1/16	1⅞ 2	1 0	1/5 Apr. 29 '96	1 0 0	75,000	Johanbrg.	99, Cannon-street.
Cen. de Kaap	/9 1/3	/9 1/3	5/-	—	0 5 0	240,000	De Kaap	Palmerston Bldgs
„ Roodp't Deep	1⅞ 2	1 15/16 2 1/16	1 0	—	1 0 0	220,000	—	120, Bishopsgate st.
Champ d'Or...... G	1¾ 2¼	1¾ 2¼	1 0	3/2 Feb. 27 96	1 0 0	116,016	Rand	8, Old Jewry, E.O.
Charterland G.F...	⅝ ¾	11/16 13/16	1 0	—	1 0 0	150,000	—	19, S. Swithin's lane
Chimes West	1⅛ 1⅜	1¼ 1½	1 0	—	1 0 0	150,000	—	Winchester Ho.
City and Sub. Nw G	4¾ 5	5 1/16 5 3/16	4 0	10/- June '95	4 0 0	340,000	Rand	Gresham Ho.
Con. Bultfontein D	31/6 32/6	31/6 32/6	1 0	9d. July 15,'96	1 0 0	721,500	Griqualnd	62, Lombard-st.
Con. Deep Levels G	5 5¼	5¼ 5¾	1 0	4/- Jy 15, 96	1 0 0	187,250	Transvaal	30, St. Swithin's-lane
Con. G. Fields S A.	12¾ 12⅞	13 5/16 13 7/16	1 0	10/ May 14 '96	1 0 0	,250,000	S. Africa	8, Old Jewry.
Do. 6% Pref.	24/ 25/	24/6 25/	1 0	7 1-5d Jne26 96	1 0 0	1,243,999	„	„
Do. 5½% Deben...	108¼ 109½	108¼ 109½	5 0	5½% July 1,'96	5 0 0	600,000	„	„
Crown Deep ...... G	12¼ 12¾	12¼ 12¾	1 0	—	1 0 0	250,000	Rand	120, Bishopsgate-st.
„ Reef ...... G	11⅝ 11⅞	11⅝ 11⅞	1 0	10/-Apr. 29 '96	1 0 0	120,000	„	„
DeBeers Consol. D	29 7/16 29 9/16	29⅞ 30	5 0	22/- July 15 '96	5 0 0	789,791	Kimberl'y	62, Lombard-street.
Do. 5% 1st Deb....	109½ 110½	109½ 110½	—	5% July 1 '96	—	£3,500000	„	„
Do. 5½% Bul. Ob.	104 106	104 106	—	5½% Apr. 1 96	—	720,000	„	„
Doornkop	5/ 6/	5/ 6/	1 0	—	1 0 0	250,000	Doornkop	Warnford Court
Driefontein	2⅝ 2⅞	2⅝ 2⅞	1 0	—	1 0 0	175,000	—	Winchester Ho.
Durban Roodept. G	6⅝ 6⅞xd	7⅝ 7⅞	1 0	3/- Sept.16 '96	1 0 0	£125,000	Rand	28, Leadenhall-bldgs
„ Deep..........	4⅜ 4⅝	4⅜ 4⅝	—	—	—	—	—	
Eastleigh .... G	15/16 1	15/16 1 1/16	1 0	rts May 14 '96	1 0 0	240,000	Klerksdrp	52, Leadenhall Street
East Orion.........	⅛ ¼	⅛ ¼	1 0	—	1 0 0	275,000	Rand	8, Old Jewry.
„ Rand.......... G	7 7⅛	7 3/16 7 5/16	1 0	—	1 0 0	570,000	„	170, Winchester-ho.
Exploration	2⅞ 3⅛	3⅛ 3⅜	1 0	rts June 26 '96	1 0 0	148,000	S. Africa	30, S. Swithin's-ln.‡
Exploring L & M...	1 5/16 1 7/16	1 7/16 1 9/16	1 0	2/ Dec. 16, '95	1 0 0	216,215	„	19, „
Ferreira .... G	19½ 20	19¾ 20¼xd	1 0	25/ Aug. 28 '96	1 0 0	45,000	Rand	120, Bishopsgt st. Wn‡
French Rand	2⅞ 3⅛	3 1/16 3 3/16	1 0	—	1 0 0	480,000	Rand.........	28, Austin Friars.
Geldenhuis Deep G	5 5¼	5½ 5¾	1 0	—	1 0 0	265,000	Transvaal .	30, St. Swithin's-lane
Geldenhuis Est. G	3⅝ 3⅞	3⅞ 4⅛	1 0	6/- Jy 26 '95	1 0 0	187,500	Rand	120, Bishopsgt st. Wn‡
„ Main Reef	15/16 1 1/16	1 1⅛	1 0	2/ Feb. 13 96	1 0 0	150,000	„	Warnford Court, E.C
George Goch ... G	2 1/16 2 3/16	2¼ 2¾	1 0	—	1 0 0	100,000	„	Johannesburg.
Ginsberg New ... G	2⅛ 2¼	2 3/16 2 5/16	1 0	—	1 0 0	130,000	Drietfon .	Warnford Court, E.C.‡
Glencairn .... G	3 3⅛	3¼ 3⅜	1 0	2/6 Feb. 13 '96	1 0 0	200,000	Rand	2, Drapers-gardens.
Golden Dove	1⅜ 1⅞	1⅝ 1⅞	1 0	—	1 0 0	60,000	Natal	65, Chancery Lane.
Gld. Fls. Deep... G	10¼ 10¾	11¼ 11¾	1 0	—	1 0 0	600,000	S. Africa	8, Old Jewry.
G.F. of Lydenb'rg	3 3¼	3¼ 3½	1 0	—	—	—	Lydenb'rg	7, Lothbury.
G. F. of Mashonld.	¼ ⅜	¼ ⅜	1 0	—	1 0 0	200,000	Mashonld.	19, St. Swithin's-ln.
G.F. of T. de Fuego	12/ 12/6	12/ 12/6	—	—	—	—	—	75, Lombard Street.
Graskop .... G	4/9 5/3	5/ 5/6	5/-	2½% Mar. '92.	0 5 0	400,000	Lydenburg	2, Tokenhouse Bldgs
Gt. Eastrn. Colliery	1 1⅛	1 1/16 1 3/16	1 0	—	1 0 0	376,666	Grootolei	Gresham House.
Griqualand W.... D	8 8¼	8 8¼	10 0	4/ July 15. '96	10 0 0	105,700	Transvaal .	62, Lombard-street
Heidelbg. Est. Ex.	⅜ ½	⅜ ½	1 0	—	—	—	Heideltg.	
Henderson's Trans	2 5/16 2 7/16	2 9/16 2 11/16	1 0	—	1 0 0	250,000	Zoutpanbg	85, Gracechurch st.
Henry Nourse ... G	6⅝ 6⅞	6¾ 7	1 0	—	1 0 0	100,000	De Kaap...	Warnford-court.
Hetty	9/16 11/16	9/16 11/16	1 0	—	1 0 0	110,000	Middlevei.	55, Bishopsgate st Wn
Joe's Reef .... G	3/16 5/16	3/16 5/16	1 0	—	1 0 0	57,404	„	21, Mincing Lane.
Johannesbrg Invst	3 11/16 3 13/16	3⅞ 4	1 0	1/ July 15, '96	1 0 0	650,000	—	7, Lothbury.
„ Pioneer	9 10	9 10	1 0	12½% Nov.,'93	1 0 0	21,000	Rand.........	Johannesburg.
Jubilee .... G	8¼ 9¼	9 9¼	1 0	2/ July 30 '96	1 0 0	30,000	„	8, Old Jewry.†
Jumpers .... G	6⅛ 6⅝	6⅜ 6⅞	1 0	6/- Mar. 27 '96	1 0 0	100,000	„	120, Bishopsgt st. Wn‡
„ Deep......	5 6	5 6	1 0	—	1 0 0	300,000	„	30, S. Swithin's lane
Kimberley .... D	⅛ ¼pm	⅛ ⅜ pm	1 0	1/ June 26, '96	0 10 0	98,672	Kimberley	19, Finsbury circus
„ Rdpt....	2⅜ 2⅞	3 3⅛	1 0	—	1 0 0	125,000	„	2, Drapers-gardens
Kleinfont-in Cen.	⅝ ⅞	¾ 1	1 0	—	1 0 0	225,000	E. Rand ...	Winchester House
Klerksdorp	13/9 14/3	14/9 15/3	10/-	—	0 10 0	400,000	Klerksdorp	110, Cannon St.
Knight's Deep......	2⅛ 2⅝	2⅛ 2⅝	1 0	—	1 0 0	295,194	Rand..... ...	8, Old Jewry
Koffyfontein...... D	⅞ 1	⅞ 1	1 0	x.rts.Jun10'96	1 0 0	125,000	Jacobsdaal	6, Gt. St. Helen's.
Lancaster	2½ 2¾	2 9/16 2 11/16	1 0	—	1 0 0	226,500	Luip. Vlei	120, Bishopsgt st. Wn
Langlaagte Est. G	5¼ 5½	5¼ 5½	1 0	3/ July 30 '96	1 0 0	470,000	Rand.........	59, Holborn Viaduct
„ Royal	2⅛ 2¼	2 5/16 2 7/16	1 0	rts. Mar. 6 '96	1 0 0	100,000	„	2, Drapers-gardens.
„ Star...	1¼ 1½	1⅛ 1⅜	1 0	—	1 0 0	170,000	„	
Lisbon-Berlyn .. G	5/9 6/3	6/6 7/6	2/6	—	0 2 6	889,233	Lydenburg	Suffolk House,
Lon. Paris Fin & M.	1 1/16 1 3/16	1⅛ 1¼	1 0	—	1 0 0	500,000	—	53, Old Broad Street
London & S. A. Ex.	15 15⅛	15 15½	10/	4/- June 26 '96	0 10 0	100,000	S. Africa ...	19, Finsbury-circus.
Luipaards Vlei Est.	2¼ 2⅜	2¼ 2⅜	1 0	6% Mar. '90	1 0 0	319,003	Rand...... ...	Warnford-court.‡
Lydenburg Estate.	1 11/16 1 13/16	1 13/16 1 15/16	1 0	—	1 0 0	190,000	Lydenburg	85, Gracech. Street
„ Ld & Exp.	¼ ⅜	¼ ½	1 0	—	1 0 0	200,000	„	120, Bishopsgte St.
„ M'g. Est.	7 7⅛	7¼ 7⅜	1 0	—	1 0 0	300,000	„	
Main Reef (New) G	15/16 1 1/16	1 1/16 1 3/16	1 0	—	1 0 0	111,500	Rand.........	15, George St., Mn H
Malmani Gold Syn	2/ 4/	2/ 4/	2/6	—	0 2 6	200,000	Transvaal	Throgmorton House
Marie Louise.........	2⅞ 3⅛	2⅞ 3⅛	1 0	—	1 0 0	60,000	Rand.........	15, George St., Mn H
Marievale Nigel ...	⅞ 1⅛	⅞ 1⅛	1 0	—	1 0 0	250,000	„	„
Mashon. Agency...	2 2⅛	2¼ 2⅜	1 0	2/ Ap. 16 '96	1 0 0	100,000	Mashonald	8, Old Jewry, E.O.
„ Central...	⅞ 1	⅞ 1	1 0	—	1 0 0	160,000	„	„
Matabelel'd G. R'f	4⅜ 4⅝	4¾ 4⅞	1 0	—	1 0 0	110,000	Matabelel'd	3, Copthall-buildings
May Con. (New) G	2⅝ 2¾	2⅝ 2⅞	1 0	2/- Mar. 12 96	1 0 0	236,500	Rand...... ...	4, Lothbury.‡
Meyer & Charl.... G	5¾ 6	5⅞ 6⅛	1 0	5/ Feb. 13 96	1 0 0	75,020	„	1, Crosby Square.‡
Minerva	⅞ 1	⅞ 1	1 0	—	1 0 0	150,000	„	Winchester House.
Mines Selection ...	⅞ 1⅛	⅞ 1⅛	1 0	—	1 0 0	100,000	—	33, Br'd St. Avenue.
Modderfontein.. G	6⅝ 6⅞	6¾ 7xr	1 0	rts Aug. 26 '96	1 0 0	200,000	Rand.........	13, George Street
„ "B" Extensn.	1 9/16 1 11/16	1 11/16 1 13/16	1 0	—	1 0 0	325,000	—	28, Austin Friars
Molyneux Consoli.	1 7/16 1 9/16	1⅝ 1⅞	1 0	—	1 0 0	220,000	Modderftn	120, Bishopsgate st
Moodies .... G	⅞ 1	15/16 1 1/16	1 0	-/4 May '90	1 0 0	240,000	„	Gresham House.
Mozambique.........	1⅝ 1¾	1 9/16 1 11/16	1 0	—	1 0 0	400,000	S.E. Africa	13, Austin Friars.
Namaqua C	1⅝ 1⅞	1⅝ 1⅞	2 0	3/- July 15 '96	2 0 0	94,351	Namaqualď	34, Leadenhall-bldgs.
New African	3⅛ 3⅜	3⅜ 3⅝	1 0	5/ July 15 '96	1 0 0	190,000	—	83, Hatton Garden.
„ Bultfontein D	1⅝ 1¾	1 11/16 1 13/16	1 0	1/- July 10 '96	1 0 0	150,000	Griqu'd. W.	6, Drapers Gardens
„ Chimes...... G	1⅝ 1⅜	1 5/16 1 7/16	1 0	1/- Mar. 27 '96	1 0 0	100,000	Rand.........	8, Old Jewry, E.O
„ Comet	2⅝ 2¾	2⅝ 2¾	1 0	—	1 0 0	175,000	Heidelburg	Winchester-house.
„ Crœsus...... G	1 7/16 1 9/16	1¼ 1⅜	1 0	rts Apr 17 '95	1 0 0	255,000	Langlaagte	120, Bishopsgt.st. Wn
„ Beriot ...... G	9⅛ 9⅜	9⅛ 9⅜	1 0	5/ July 30, '96	1 0 0	83,750	Rand.........	96, Gresham Ho EC
„ Jagersf. ... D	9⅞ 10	10 1/16 10 3/16	5 0	10/ Apr. 15 '96	5 0 0	200,000	Transvaal .	5, Copthall-buildings
„ Kleinfontein G	3⅛ 3⅜	3 9/16 3 11/16	1 0	12½pc Mar,'95	1 0 0	82,500	Rand.........	Winchester House
„ Midas	2⅛ 2⅜	2⅛ 2⅜	1 0	rts. Jan. 16, '96	1 0 0	150,000	Mid'le Vlei	120, Bishopsgt-st., W
„ Primrose ... G	5⅜ 5⅝	5¾ 6	1 0	5/ Feb. 13, '96	1 0 0	278,750	Rand.........	2, Draper's-gardens.
„ Rietfontein G	3¼ 3½	3¼ 3½	1 0	—	1 0 0	160,000	„	Warnford-ct., E.O.
„ S. Augustine D	9/ 9/6	8/9 9/3	1 0	—	0 19 6	299,137	Griqu'ld W	30-1, St. Swithin's-l.
„ Spes Bona... G	1⅛ 1¾	1⅛ 1⅜	1 0	—	1 0 0	113,701	Rand.........	24, N. John-st., E.O
„ Steyn Estate	1 11/16 1 13/16	1 13/16 1 15/16	1 0	—	1 0 0	125,000	Heidelber	19 Bury Street, pl

AFRICAN MINES—(*Continued*).

Name.	Closing Price, Sept. 18, 1896	Closing Price, Sept. 11, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
			£					
Nigel .... G	2⅞ 3⅛	3⅛ 3⅜	1 0	rts Aug 10 '95	1 0 0	160,000	Rand.........	96, Gresham Ho., E.C
„ Deep ...... G	1⅝ 1¾	1¾ 1⅞	1 0	—	1 0 0	195,000	Heidelberg	8 Old Jewry
North Charterland	5/ 7/ nom	5/- 7/- nom	1 0	—	1 0 0	800,000	—	Winchester House
„ Randfontein	2 2⅛	2 5/16 2 7/16	1 0	—	1 0 0	235,000	—	8, Princes street
Nourse Deep.........	5¼ 5¾	5½ 6	1 0	—	1 0 0	375,000	Rand.........	120, Bishopgt.-st., Wn
Oceana Consoldatd	1⅜ 1½	1½ 1⅝	1 0	—	1 0 0	—	Wtrbg Lyn	13, Austin Friars.
„ Develpmnt	9/16 11/16	⅝ ¾	1 0	—	1 0 0	50,000	Heidelbrg.	„
„ Minerals ...	9/16 11/16	⅝ ¾	1 0	—	1 0 0	500,000	„	„
Orange F.S.E. ... D	3¼ 3¾	3¼ 3¾	1 0	/6 Apr.,29, 96	1 0 0	284,000	Orange F.S.	10, Moorgate-street.
Orion (New)...... G	¾ ⅞	1 1⅛	1 0	10% Aug. 95	1 0 0	31,000	Rand.........	8, Old Jewry.
Paarl Central ... G	1¼ 1⅜	1⅛ 1¼	1 0	—	1 0 0	138,750	Transvaal .	120, Bishopsgt st. Wn.
Pardy's Mozambq	1⅛ 1⅜	1⅜ 1⅝	10/	rts Mar 12 '96	0 10 0	60,000	S.E. Africa	Broad St. Avenue.
Piggs Peak ...... G	⅝ ⅞	⅝ ⅞	1 0	—	0 19 0	200,000	Swazielnd.	4, Sun Court,
Porges Randfontn.	1⅛ 1⅜	1⅝ 1¾	1 0	2/ Feb. 13 '96	1 0 0	437,500	Rand.........	1, Bank Buildings
Potchefstroom... G	9/16 11/16	⅜ ½	1 0	—	1 0 0	389,750	Potchefst...	19, Bury-st., E.C.
Princess Estate G	2⅝ 2⅞	2¾ 3	1 0	—	1 0 0	125,000	Rand.........	33, Cornhill, E.C.
Rand Central Ore	1½ 1¾	1½ 1¾	1 0	25 p c Aug. 95	1 0 0	115,000	—	8, Princes-street, E.O
Randfontein ...... G	2 11/16 2 13/16	2⅞ 2 15/16	1 0	[illegible]	1 0 0	,000,000	Rand.........	1, Bank Buildings
Rand Mines ...... G	29½ 30	30¾ 31	1 0	—	1 0 0	332,798	„	120, Bishopsgt st. Wn‡
Rand-Rhodesia Ex	1 1¼	1 1⅛	1 0	0 p.c. Oct. '9[illegible]	1 0 0	25,000	R&Rhodesa	123, „
Rhodesia Ex & Dv.	6 6⅛	6½ 7	0	—	1 0 0	50,000	Mt &Mash'l	15 & 16, Geo. St. E.C
Robinson(SA)Bank	5¾ 6⅛	5¾ 6¼	4 0	/ Apl. 15, 96	4 0 0	750,000	—	8, Prince's-street
„ Deep......	9½ 10	9½ 10	1 0	—	1 0 0	500,000	M'nR'fR'nd	120, Bishopsgate st.
„ Diamond	1⅛ 1¾	1⅝ 1⅞	1 0	—	1 0 0	350,000	Kaal Valley	8, Prince's street
„ Gold......	8¾ 9	8⅞ 9⅛	5 0	5/ July '96	5 0 0	550,000	M. Rf. Rand	28, Austin Friars
„ Randftn.	1¼ 1⅜	1¼ 1½	1 0	—	1 0 0	517,000	Rand.........	8 Prince's-street.
Roodepoort Deep	2⅜ 2⅝	2 9/16 2 11/16	1 0	—	1 0 0	170,000	„	8, Old Jewry, E.O.
Roodepoort Un. G	4⅞ 5⅞	5 5¼	1 0	2/ July 30 '96	1 0 0	130,000	„	Warnford-court.‡
Rose Deep............	5¼ 5¾	5¼ 5¾	1 0	—	1 0 0	300,000	M. Rf. rand	30-31, S. Switn's. lane
Rothery Block......	8/ 10/	8/ 10/	1 0	—	—	—	—	55, Bishopsgate st
Sacke Estates	1⅛ 1¾	1⅛ 1¾	1 0	1/ June 12 '96	1 0 0	225,000	—	19, Bury Street,
St. Helen's Devel.	2⅜ 2⅝ nom	2⅜ 2⅝ non.	1 0	—	1 0 0	47,950	S. Africa ...	13, S. Helen's Place.
Salisbury New ...	3⅞ 4⅛	4⅛ 4⅜	1 0	—	1 0 0	98,000	Rand.........	96, Gresham Ho., E.C
Sheba .... G	1 15/16 2 1/16	2 2⅛	1 0	1/- June 26 '96	1 0 0	850,000	Lydenburg	18, S. Helen's place.
Simmer & Jack... G	6 7	6½ 7	5 0	2/ Aug 14 95	5 0 0	940,000	Rand......	8, Old Jewry.
S.A Gold Trust New	8⅛ 8⅜	8⅝ 8¾	1 0	7/6 Jun 26 '96	1 0 0	250,000	S. Africa ...	„
South West Rand	5/16 7/16	5/16 7/16	1 0	—	1 0 0	158,000	Rand.........	Winchester House.
Spitzkop (New) G	1 1⅛	1 3/16 1 5/16	1 0	—	1 0 0	99,070	Lydenburg	15, Bishopsgt-st. Wt.
Stanhope .... G	1 1⅛	1 1/16 1 3/16	1 0	2/- Oct 20 '95	1 0 0	34,000	Rand...... ...	96, Gresham Ho., E.C
Sutherland R. ... G	1/9 2/3	1/5 2/	1 0	—	1 0 0	220,000	Zoutpan'bg	Dashwood Ho.
Tati Concessions ...	1⅝ 1¾	1¾ 1⅞	1 0	rts Jy. 22 '95	1 0 0	392,000	—	Gresham House.
Trans. Coal Trust...	1 7/16 1 9/16	1⅛ 1⅜	1 0	1/-Apr. 29, 96	1 0 0	439,965	Rand.........	Broad-st. House, E.C
„ Consolidatd	1¾ 2	1¾ 2	1 0	—	1 0 0	485,131	Transvaal	120, Bishopsgte st Wn
„ Est. & Dev.	15/16 1 1/16	15/16 1 1/16	1 0	—	1 0 0	428,600	„	10, New Broad-st. E.C
„ Gold Fields	3¼ 3½	3⅜ 3⅝	1 0	3/- Apr. 15 '96	1 0 0	135,000	S. A. R......	120, Bishopsgt-st. Wn
„ Land.........	⅛ ⅜	9/16 11/16	1 0	—	1 0 0	79,915	Transvaal .	25, Abchurch Lane.
Treasury............ G	2⅝ 3	2¾ 3¼	4 0	12½% Sep.'94	4 0 0	135,000	Rand.........	Warnford Court.
United Exploratn.	1⅛ 1⅜	1⅛ 1⅜	1 0	—	1 0 0	250,000	—	120, Bishopsgte St.
„ Ivy Reef...... G	⅞ 1	15/16 1 1/16	1 0	/6 June 26 '96	1 0 0	45,000	Transvaal .	110, Cannon-street.
„ Langlaagte(N) G	⅜ ⅞	⅝ ⅞	1 0	—	1 0 0	146,000	Rand.........	85, Gresham Ho., E.C
„ Mines Bultf. D	1⅛ 1¾ nm	1⅛ 1¾ nmxd	1 0	1/ Aug. 28,'96.	1 0 0	125,000	Kimberley	120, Bishopsgate St.
„ Pioneer...........	⅜ ⅝	⅜ ⅝	1 0	—	1 0 0	75,000	De Kaap ...	16, S. Helen's-pl., E.C
Van Ryn .... G	4⅜ 4½	4⅝ 4⅞	1 0	4/- Jan. 16	1 0 0	160,000	Rand.........	18, St. Swithin's-ln.
„ North ...	⅛ ¾	⅛ ⅜	1 0	—	1 0 0	116,091	—	„
„ West......	2¼ 2⅛	2⅛ 2⅜	1 0	—	1 0 0	120,000	Rand	„
Vaterskroon	¾ 1	1⅜ 1⅝	—	—	1 0 0	125,000	Rooderand	8, Old Jewry
Vesta	⅞ 1⅛	⅞ 1⅛	1 0	—	1 0 0	130,000	Rand	Winchester House
Village Main Reef	6½ 6⅝	6⅝ 6¾	1 0	rts June 26' 96	1 0 0	177,000	„	8, Old Jewry.
Vogelstruis Estate	4¼ 4½	4⅜ 4⅝	1 0	—	1 0 0	200,000	„	Winchester House.
„ Cons. Deep ...	2¼ 2½	2⅜ 2⅝	1 0	—	1 0 0	327,750	„	16, Geo. St. Mn. Ho.
Wassau .... G	⅞ 1	1 1⅛	1 0	—	1 0 0	100,000	Gold Coast	147, Cannon-street
Wemmer .... G	8¾ 9	9 9¼	1 0	10/ Apr. 29 96	1 0 0	55,000	Rand...... ...	19, Bury-street,‡†
Western Nigel......	⅝ ⅞	⅝ ⅞	1 0	—	1 0 0	207,000	Main Reef	Suffolk House.
West Rand......... G	2 1/16 2 3/16	2¼ 2½	1 0	—	1 0 0	240,000	Rand...... .	13, Geo. St., Mans. Ho.
Willoughby's Con.	1¼ 1⅝	1 11/16 1 13/16	1 0	—	1 0 0	700,000	Mashonald	3, Copthall-bldgs.
Witwatersrand G	6⅜ 6⅞	7⅛ 7⅜	1 0	—	1 0 0	250,000	Rand.........	19, Bury-st., E.C.
Wolhuter .... G	6⅛ 6¾	6⅝ 6⅞	1 0	rts Apr 26 '94	1 0 0	130,000	„	Warnford-court.†
Worcester .... G	4⅜ 4⅝	4⅜ 4⅝ xd	1 0	3/- Aug. 28 '96	1 0 0	90,727	Rand.........	8, Old Jewry.‡
Zambesia Explora.	2⅛ 2¾	2⅛ 2¾	1 0	—	1 0 0	65,000	Transvaal .	30-31, Clement's lane

BRITISH MINES.

Name.	Closing Price, Sept. 18, 1896	Closing Price, Sept. 11, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
			£		£ s. d.	£		
Basset	14/6 15/6	¾ ⅞	1 0	—	1 0 0	65,000	Cornwall	Redruth.
Blue Hills ..... CT	1 1/6	1/ 2/	*	2/- May, '81	5 19 5	5,353	„	Camborne.
Carn Brea & Tinct T	1/ 2/	1/ 2/	1 0	2/6 Dec.,'93	22 8 5	—	„	Carn Brea.
Devon Gawton CA	10/ 25/	15/ 20/	1 0	—	0 15 0	25,000	Tavistock	8, Finsbury circus.
„ Gt Cons. CA	6/ 18/	18/ 19/	5 0	1/6 May '95	2 0 0	10,240	Devon ...	„
Dolcoath .... T	18/ 19/	18/9 19/3	1 0	—	1 0 0	188,000	Cornwall	Camborne.
„	5/ 7/	5/ 6/	1 0	—	0 7 6	25,000	„	„
Drakewalls CTM	/3 /6	/6 1/	6/	—	0 2 0	61,856	„	Dashwood House.
East Pool ...... AT	⅞ 1⅛	1¼ 1¾	*	1/6 Sept. '94	0 9 9	6,400	Cornwall	Illogan.
Great Laxey...... L	1¾ 2¼	2⅜ 2⅝	4 0	5/- Apr., '92	4 0 0	15,000	I. of Man	Gresham House.
Halkyn	10 11	10 11	1 0	2/6 June 26 '96	1 0 0	10,000	Flint	Chester.
Isle of Man L	5¾ 6¼	6¾ 6¼	5 0	3/- June '96	5 0 0	11,000	I. of Man	„
Killifreth .... T	4/ 5/	4/6 5/6	*	11/6 Nov.,'94	5 15 6	6,000	Cornwall	Truro.
Leadhills L	1 1⅛	1 1⅛	6 0	1 6 Apr 29 '9[illegible]	6 0 0	20,000	Lanarksh.	30, Finsbury-circus.
Levant .... CT	3¼ 3½	3 3¼	*	4/- Nov., '94	11 9 6	2,500	Cornwall	Penzance.
Polberro .... T	4/ 5/	4/6 5/	*	—	2 1 5	18,000	S.Agnes,Cl.	37, Walbrook.
So. Condurrow TC	1/ 2/	2/ 2/6	*	3/6 Apr. '93	7 17 6	6,123	Cornwall	20, Great St. Helens
„ Crofty TA	⅛ ¼	1/ 2/	*	—	17 10 6	5,769	„	Pool, Cornwall.
Weardale L	—	8/9	4 0	1/3 Oct. '90	1 10 0	50,000	Durham...	3, Lombard-court.
West Kitty ...... T	2 2¼	1⅛ 2	*	2/- Dec, '94	1 2 0	6,000	Cornwall	37, Walbrook.
Wheal Agar ... TA	1/ 2/6	1/ 2/	*	2/6 Aug. '88	23 15 2	6,000	„	Redruth
„ Friendly.. T	1/ 1/6	1/ 1/6	*	—	0 12 9	10,000	„	2, Copthall Bldgs. E.C
„ Grenville T	4½ 5½	4½ 5½	*	3/- Nov 28 '95	18 2 0	6,000	„	7, Union-court, E.C.
„ Kitty...... T	2/ 3/	5/6 6/	*	3/- Mar. '88	4 5 6	8,550	„	Truro.
„ Metal & F. T	5 6 4/	3/5 4/	*	—	0 3 0	60,000	„	14 Broad-street Av.

INDIAN AND ASIATIC MINES.

Name.	Closing Price, Sept. 18, 1896	Closing Price, Sept. 11, 1896.	Am't. of Share	When last XD and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
Balaghat Mysore G	3/ 4/	3/6 4/	1 0	—	1 0 0	160,000	India	6-7, Queen-street-pl
Burma Ruby....... R	13/16 15/16	11/16 13/16	1 0	—	0 18 0	298,370	Burmah...	Suffolk House E.C.
Champion Reef... G	7⅞ 8⅛	8 8⅛	1 0	4/6 Aug. 13 '96	1 0 0	211,645	India	6-7, Queen-street-pl.
Colar Central ... G	1/6	1/ 1/6	1 0	—	1 0 0	200,000	„	Dashwood Ho., E.C.
Coromandel...... G	2⅛ 2⅜	2⅛ 2⅜	1 0	—	1 0 0	120,000	„	6-7, Queen-st.-place
Gold Flds Mysore G	24/ 25/	24/6 25/6	1 0	2/- Feb '96	1 0 0	220,000		6-7, Queen-street pl.
Kadur Mysore......	6/9 7/3	7/ 7/6	5/	—	0 5 0	410,000	„	Copthall House, E.C
Kempinkote Gd Fd	1/6 2/	1/6 2/	5/	—	0 4 0	575,210	India	6-7, Queen-st.-place
Mysore .... G	8 1/16 8 3/16	8 8¼	1 0	6/ June	1 0 0	245,954	„	6-7, Queen-street pl.
„ Harnhalli ... G	-/6 1/	/6 1/	1 0	—	0 18 6	100,007	„	13, Copthall Avenue
„ Reefs ... G	9/6 10/6	10/6 11/6	1 0	—	0 19 6	160,000	„	6-7, Queen-street-pl
„ West(N) G	⅞ 1	⅞ 1	1 0	rts. Jan. 16 '95	0 19 6	127,408	„	2, Gt. Winchester St.
„ Wynaad G	⅞ 1	⅞ 1	1 0	rts. Jan. 16 '96	0 19 6	125,000	„	„
Nine Reefs ...... G	6/9 7/3	6/6 7/	10/	—	0 3 6	250,000	„	6-7, Queen-street-pl
Sundydroog...... G	3 7/16 3 9/16	3 9/16 3 11/16	1 0	2/- June 26 '96	1 0 0	200,000	„	„
Ooregum (Df.O.) G	3 1/16 3 3/16	3 5/16 3 7/16	1 0	2/ July 15 '96	1 0 0	145,000	„	„
„ (10% Pref.).	4 4⅛	4 4⅛	1 0	4/ July 15 '96	1 0 0	97,011	„	„
„ (10% Pref.).	3¼ 3⅜	3¼ 3⅜	1 0	4/ July 15 '96	0 5 0	12,989	„	„
Pahang Kabang T	1/16 ⅛	1/16 3/16	1 0	—	1 0 0	200,000	Malay Pn.	4a, Jeffrey's sq. E.C
„ Corp.......	4/ 6/	4/ 6/	—	—	—	—	—	
Yerrakonda ...... G	1/3 1/9	1/ 1/6	4/	—	0 5 0	187,431	Mysor ...	6-7 Queen-street pl.

"THE MINING JOURNAL" SHARE LIST—(Continued)

AUSTRALIAN AND NEW ZEALAND MINES.

Name.	Closing Price. Sept. 18, 1896	Closing Price. Sept. 11, 1896.	Am't. of Share	When last XD and Dividend.	Called up per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
Aladdin's Lamp G	2⅜ 2¾	2¾ 2⅞	1 0	2/ July 15 '96	1 0 0	100,000	C'knN.S.W	4-6, Throg. Avenue.
Anglo-Cont. Corp.	1¼ 1⅜	1¼ 1⅜	1 0	100 % '95	1 0 0	125,000	—	Worcester House.
" French Exp	13/16 15/16pm	13/16 15/16pm	1 0	x.nwAug 28'96	0 10 0	40,000	W. Austral	3, Princes Street.
" Ger. Explor.	1 1⅛pm	1 1⅛pm	1 0	5/ Oct. 20 '95	0 10 0	40,000	"	"
Aroha ...G	1 1/16 1 1/16	1 5/16 1 5/16	1 0	—	1 0 0	100,000	N. Zealand	30, S. Swithin's Lane
Arrow Brownhill G	¾ ⅞	¾ ⅞	1 0	—	1 0 0	90,007	Cool., W.A.	4, Gt. Winchester St.
Assoc. Gold Mines	3⅜ 3⅛	3 7/16 3 3/16	1 0	bo June 28 '96	1 0 0	375,000	"	20, Bucklersbury
Australasian ...G	4/6 5/6	4/3 4/9	1 0	-/6 Mar., '92	1 0 0	10,000	Gymp.Q'ld	6, Queen-st. place
Australian ...C	—	—	20 0	1/-July 30 '96	7 7 6	218,315	S. Austral.	42, New Broad-street
Aus. Bro. Hill Con.	1/ 1/6	1/ 1/6	1 0	1/- June, '91	0 19 3	574,799	BarR.NSW	Winchester House.
Baker's Creek ...G	⅝ ⅞	⅝ ¾	1 0	1/- May '95	0 17 6	500,000	H'gveNSW	Hillgrove, N.S.Wales
Bamboo Queen & R	⅞ 1⅛	¾ 1	1 0	—	1 0 0	—	Pilb., W.A	38, Coleman Street.
Bayley's Reward G	4/6 5/6	5/ 6/	1 0	-/4 Dec. 94	1 0 0	480,000	Coolgardie	F'sb'y. H. Bl'mf'ld St.
Big Blow ...G	7/ 8/	8/6 8/6	1 0	—	1 0 0	150,000	"	151, Cannon Street.
Black Flag Consld.	1⅛ 1¼	1¾ 2	1 0	—	1 0 0	140,000	Coolgardie	4, Bishopsgte St. Wn
" Propty.	⅛ ⅝	⅜ ½	1 0	—	1 0 0	600,000	Coolgardie	1, Metal Exch. Bldgs
Blagroves Freehld	3/ 3/6	3/ 3/6	2/6	—	0 2 6	500,000	Corom. N Z	Dashwood House.
Blue Spur and G. G	10/- 11/-	10/ 11/-	1 0	—	1 0 0	82,293	Otago, N.Z.	6-8, Great St. Helen's
Bonnie Dundee G	7/6 8/6	7/6 8/6	1 0	—	0 19 0	120,000	C. T.Q'land	16, S. Helen's Place
Brilliant ...G	⅞ 1 xd	⅞ 1	2 0	/4 Sept. 16, '96	2 0 0	250,000	"	Charters Towers.
" Block ...G	15/16 1 1/16	1 1⅛	1 0	-/6 Dec. 16 '95	1 0 0	70,000	"	16, S. Helen's Place
" St. Geo. G	1⅛ 1¼ xd	1⅛ 1¼	10/	/9 Sept. 15, '96	0 10 0	72,000	"	Charters Towers.
Brit. Brok. Hill S	11/16 13/16	11/16 13/16	1 0	—	1 0 0	240,000	N.S. Wales	Dashwood Ho., E.C.
Broad Arrow	2/ 3/	2/ 3/	5/	—	0 5 0	400,000	W. Feather	57, Moorgate Street.
Broken Hill Prop. S	2⅜ 2⅛	2⅜ 2⅛ xd	8/	1/- Aug. 28 '96	0 8 0	960,000	N. S. Wales	3, Gt. Winchester st.
Brownhill Prouty.	5/16 7/16	⅜ ½	1 0	—	1 0 0	67,500	Hannan's	4, Gt. Winchester st
Bulbauk & Birthd'y	2¼ 2⅜	2¼ 2⅜	1 0	—	1 0 0	150,000	Coolgardie	Copthall House.
Cassidy Hill ...G	9/16 11/16	⅝ ¾	1 0	—	1 0 0	115,000	"	9-10, King Street, E.
Central Boulder G	13/16 15/16	¾ ⅞	1 0	—	1 0 0	93,522	K'lg'rl.WA	Wor'st'r Ho., Walbr'k
" Exp. & Invst.	1/16 1 1/16pm	⅝ ⅝ pm	1 0	4·5d Mar 13'96	1 0 0	200,000	W. Austral	1, Met. Exchg. Bldgs
" " of W. A.	¾ ⅞	⅞ 15/16	1 0	1/7½ Mar 27 96	1 0 0	122,000	"	2, "
Charters Tow. ...G	1/3 1/9	1/3 1/9	10/	—	0 9 6	200,000	Queenslnd	110, Cannon Street
Colonial Finance...	3⅜ 3⅝pm	3⅜ 4 pm	1 0	10/ Mar. 27 '96	0 10 0	21,140	W. Austral	139 "
" Gold Fields	⅝ ⅝pm	9/16 11/16pm	1 0	—	0 12 6	75,250	"	70, Cornhill.
Con. G. M. of W. A.	5/16 7/16	⅜ ⅝	1 0	—	1 0 0	246,779	Pilbarra ...	30, Moorgate Street.
" Murchison ...	⅜ ¾	⅜ ¾	1 0	—	1 0 0	225,533	Murc., W A	Broad Street House.
Contl. & W.A. Trust	1 1⅛	1 1⅛	1 0	—	1 0 0	104,467	W. Austral	"
Coolgardie Gold ...	¾ 1	¾ 1	10/	x.rts.Jun12'	0 5 0	90,000	Cool. W.A.	Broad Street Avenue
" Mint & I.Kg.	1 13/16 1 15/16	1 15/16 2 1/16	1 0	—	1 0 0	150,000	"	30, S. Swithin's ln.
Craven' Cal. ... G	1/6 2/6	1/6 2/	4/	-/3 June 94	0 4 0	100,000	Queenslnd	30-1, S. Swithin's-ln
Croesus So. United	15/16 1 1/16	1 1/16 1 3/16	1 0	—	1 0 0	115,000	Hann'sWA	Blomfield House
Crown United......	1⅛ 1⅜	1⅛ 1⅜	1 0	—	1 0 0	75,000	—	110, Cannon-st., E.C.
Cumbrind (New) G	/3 /9	/3 /9	1 0	2/6 Dec, '87	0 19 0	184,890	Queenslnd	Blomfield House. E.C
DayDawn B.&W. G	13/6 14/6	14/ 15/	1 0	-/6 Sept.16,'96	1 0 0	498,400	"	16, S. Helen's Place
" P. C. G	3/3 3/9	3/6 4/	1 0	-/6 Apr, '92	1 0 0	490,000	"	Winchester Ho., E C
Eaglehawk ...G	1/ 1/6	1/ 1/6	1 0	—	0 18 0	120,000	Victoria ...	71-72, King Wm. St
Eagle's Nest	⅞ 1	⅞ 1	1 0	—	1 0 0	2,500	Mt. Margrt	Finsbury House.
East Hauraki	2/ 3/	2/ 3/	5/	—	0 5 0	400,000	Haur'ki NZ	"
Explorers Synd. ...	⅛ ⅜ pm	3/16 5/16 pm	1 0	2/8 April 29'96	1 0 0	9,000	W. Austral	Copthall House
Fingall R'fs, Extd	5/16 7/16	⅜ ½	1 0	1/4 Jan. 16 '96	1 0 0	150,000	"	4, Sun Court
Florence ...G	1 1⅛	1 9/16 1 11/16	1 0	—	1 0 0	60,000	"	18, St. Swithin's ln
Gibraltar Cons. ...	15/16 1 1/16	1⅛ 1¼	1 0	—	1 0 0	300,000	N S Wales.	6, Queen-street-place
Gladiator ...G	15/16 1 1/16	⅞ 1	1 0	—	1 0 0	—	W. Austral	43, Threadneedle st
Glenrock ...G	1/3 1/9	1/6 2/	10/-	—	0 8 6	450,000	N. Zealand	3-5, Queen-st. E.C.
Golden Cement G	⅞ 1	15/16 1 1/16	1 0	—	1 0 0	175,000	W. Austral	3, Princes Street, EC
" Crown... G	1⅝ 1⅞	2 2⅛	1 0	—	1 0 0	100,000	"	54, Old Broad Street
" Gate...G	1/ 2/	1/ 2/	10/	—	0 10 0	150,000	Queenslnd	34-36, Gresham-st.
" Horse Shoe...	1⅝ 1¾	1 13/16 1 15/16	1 0	—	1 0 0	—	W. Austral	13. Helen's Place
" Link ...G	15/16 1 1/16	15/16 1 1/16	1 0	5/- Oct 30' 95	1 0 0	90,000	"	9-10, King Street, E.C
" Plum...G	½ ⅝	¾ ⅞	1 0	—	1 0 0	120,000	"	4, Bishopsgate Street
Gold Estates......	1⅞ 2⅛	2 2⅛	1 0	3/ June 12 '96	1 0 0	60,000	"	20, Bishopsgte-st Wn
Great Boulder ...G	6 15/16 7 1/16xd	7 5/16 7 7/16	1 0	5/ Sept. 16, 96	1 0 0	240,000	Yilgarn ...	3, Gracechurch st.
" " Junction	1 1⅛	1 3/16 1 5/16	—	—	—	—	"	Worc. Ho., Walbrook
" , M'n R'fs	1 1/16 1 3/16	1 5/16 1 7/16	10/	—	0 10 0	240,000	—	3, Princes Street.
" Fingall Rfs.	⅜ ⅝	⅜ ½	1 0	5% Jan. 16, 96	1 0 0	175,000	Kurnalpi	Broad Street House
Gresham Synd. ...	⅛ dis ¼pm	⅛dis par	1 0	4/ &bo.Jn12'96	1 0 0	50,000	W. Austral	13-14, Abchurch ln
Hainault	2⅜ 2⅝	2⅛ 2¾	—	—	—	—	—	82, Gordon st., Glas.
HamptonGoldFlds	⅞ 1	15/16 1 1/16	1 0	—	0 10 0	—	—	9, S. Mildred's Ct.
" GoldHill	1/6 2/	1/6 2/	1 0	—	—	—	—	53-94, Gracechurch st
" Plains...	3⅞ 4	4⅜ 4⅝	1 0	rts May 14 '96	1 0 0	300,000	Cool. W.A.	29, S. Swithin's lane
" PlainsEx	6 6 7/6	6,6 7/6	1 0	—	0 18 0	180,000	"	Suffolk House, E.C.
Hannan's BrwnHil	5¼ 5⅝	5⅜ 6	1 0	—	1 0 0	65,000	"	Broad Street House
" Devel'pm'nt	1⅛ 1¼	1⅛ 1¼	1 0	—	1 0 0	147,000	"	5, Moorgate-st.-bldgs
" Main Reef...	9/ 10/	11/ 12/	10/	—	0 10 0	—	Kalg. W.A.	18, St. Swithin's ln.
" North......	1 1/16 1 3/16	1 1/16 1 3/16	1 0	—	1 0 0	51,107	"	33, Cornhill.
" 100 Acre......	⅞ 1	⅞ 1	1 0	—	—	—	"	Dashwood House.
" Oroya......	1⅝ 1¾	1⅝ 1¾	1 0	—	1 0 0	—	"	20, Bucklersbury
" Prop.	1⅜ 1⅞	2⅛ 2⅜	1 0	—	0 10 0	—	"	139, Cannon Street.
" Reward... G	2 5/16 2 7/16	2⅜ 2⅝	1 0	—	1 0 0	70,000	Hann. WA	Bartholomew Ho.
" Star......	1⅛ 1¼	1¼ 1⅜	1 0	—	1 0 0	—	E. Coolgde.	Finsbury House E.C
Hauraki...... G	17/6 18/6	17/6 18/6	2/6	rtsAug.13 [illegible]	0 2 6	320,000	Coromndl.	Dashwood Ho., E.C
Hit or Miss	2¼ 2⅜	2⅜ 2⅝	1 0	—	1 0 0	120,000	Cool., W.A.	1, Queen Vic St.
Idaho ......GS	4/6 5/	4/9 5/3	5/	-/6 Jan. 16 '96	0 4 6	143,439	W. Austral	Copthall House.
Kaboonga ...G	1/ 1/6	/6 1/	10/	—	0 9 9	249,250	Queenslnd	70-71, Bishopsgate st
Kalgurli......	1⅜ 1⅝	1⅛ 1¼	1 0	—	1 0 0	34,000	W. Austral	20, Threadneedle-st
Kapanga......G	14/ 15/	13/ 14/	1 0	rts May 24 '95	0 19 6	249,760	N. Zealand	9, New Broad-street
Kathleen	3/6 4/	3/6 4/	2/6	—	0 2 6	600,000	Ha'raki, NZ	Dashwood House
" Crown...	2/3 2/9	2/3 2/9	2/6	—	0 2 6	564,258	"	" "
Kintore ......G	⅛ ½ dis	¾ ½ dis	1 0	—	0 15 0	44,000	W. Austral	13, Abchurch lane.
Komata Queen......	3/3 3/9	3/3 3/9	2/6	—	0 2 6	600,000	Ha'raki, NZ	Dashwood House,
" Reefs	10/6 11/	10/9 11/3	5/-	—	0 5 0	200,000	"	"
Kurauni Caledo'an	⅛ dis ⅛ pm	⅛ dis ⅛ pm	1 0	—	1 0 0	150,000	"	20, G. Winchester St
Kurnalpi...... G	7/6 8/6	4/ 5/	1 0	—	—	—	Coolgardie	Throgmorton House
Lady Loch......	2 5/16 2 9/16	2 7/16 2 9/16	1 0	—	1 0 0	70,000	"	34-36. Gresham-st.
" Shenton	1 13/16 2 1/16	2 9/16 2 11/16	1 0	—	1 0 0	—	—	18, St. Swithin's ln
Limerick	1 1⅛	1 1⅛	1 0	—	1 0 0	52,537	Coolgardie	Leadenhall Buildgs.
Ln. & Con. Invest.	1/16 3/16pm	1/16 3/16 pm	1 0	—	0 5 0	500,000	W. Austral	79, Queen Street.
Lon. & Globe Fin.	4 3/16 4 7/16	4⅜ 4⅛	1 0	rts Mar. 27 '96	1 0 0	150,000	"	15, Austin Friars.
Londonderry......G	2/ 3/	3/6 4/	1 0	—	1 0 0	467,000	"	3, Gracechurch-st,
L.& W. Aust. Expl.	1 3/16 1 5/16	1 7/16 1 9/16	1 0	4/-Nov 29 '94	1 0 0	270,100	"	Broad Street Ho.
Lon. W. A. Invest.	1⅞ 2⅛	2 3/16 2 5/16	1 0	1/ Aug 13 '95	1 0 0	100,000	"	"
Mainland Cons. G	2⅝ 2¾	3 3⅛	1 0	—	1 0 0	150,000	Murchison	64 Old Broad Street
Mawson's Rewrd. G	9/16 11/16	⅝ ¾	1 0	—	1 0 0	60,000	"	28 & 29, S. Swithin's ln
Menzies Gold Est.	9/16 11/16	9/16 11/16	1 0	—	1 0 0	—	"	Broad Street House
" Gold Reef	⅞ 1	13/16 15/16	1 0	2/ June 26, '96	1 0 0	175,000	"	2a, Old Broad Street
" (O'Driscoll)	⅞ 1	15/16 1 1/16	1 0	—	1 0 0	—	"	16, Tokenhouse Yard
Mills' Day Dawn G	⅝ ¾	9/16 11/16	1 0	-/6 Aug 29 '95	0 15 6	300,000	Queenslnd	16, S. Helen's Place
Mosman ......G	2/3 2/9	2/3 2/9	1 0	—	0 19 0	185,000	N.S. Wales	Bishopsgate House
Mount Lyell......	8¼ 8⅝	8⅝ 8⅞	3 0	rts June 26, '96	3 0 0	300,000	Tasmania	Finsbury House
Mount Margaret...	1⅜ 1⅝	1 15/16 2 1/16	1 0	—	1 0 0	—	W. Austral	28, St. Swithin's ln.
" Morgan G	2 7/16 2 9/16	3 7/16 3 9/16	1 0	-/6 Sep. 16, '96	0 17 6	1,000,000	Queenslnd	9, Gracechurch-st.
" Rowe	13/16 15/16	15/16 1 1/16	1 0	—	1 0 0	75,000	Coolgardie	44, Coleman Street
MurchisonN.Ch'm	6/ 7/	7/6 8/6	1 0	1/- Oct 30 '95	1 0 0	160,000	"	23, College Hill.
N'eHauraki Props	3/ 4/	3/9 4/3	5/	—	0 5 0	320,000	Ha raki, NZ	Dashwood House.
" Queen ......G	6/3 6/9	5/9 6/3	1 0	-/6 Sep 12 '95	0 19 6	158,915	Queenslnd	71-72, King Wm. St.
" Z. Jubilee ...	8/ 10/	7/16 9/16	1 0	—	1 0 0	100,000	UTh'm'sNZ	Broad-street House.
Norseman	1⅜ 1⅛	1¼ 1⅛	1 0	—	1 0 0	200,000	Dundas ...	30, S. Swithin's lane
North Boulder......	1 5/16 1 7/16	1 11/16 1 13/16	10/-	rts July 15, '96	0 10 0	—	W. Austral	13, Helen's Place
" Coolgardie ...	/6 1/	/6 1/	5/	—	0 4 0	400,000	Pilbarra ...	226, Winchester Ho.
" Kalgurli	11/16 13/16	11/16 13/16	1 0	—	1 0 0	—	—	11, Abchurch lane
Omnium G M Assoc	⅝ ⅞	¾ ⅞	1 0	—	1 0 0	80,000	—	Broad-street House
Paddington Cons.	1⅝ 1¾	1 11/16 1 13/16	1 0	—	1 0 0	75,000	W. Feather	77, Bishopsgate-st.
Pambula	⅞ 1	1 1 1/16	1 0	—	—	100,000	N. S. Wales	45-46, Broad St. Av'e
Pilbarra G. F.	⅝ ⅞	⅜ ⅝	1 0	2/ May 14,' 96	1 0 0	100,000	Pilb, W. A.	38, Coleman-street.
Precess Pt. Prop.	3/3 3/9	3/3 3/9	5/	—	0 4 6	400,000	Coro. N.Z.	Dashwood House
Ramage Syndicate	3⅜ 3⅞	4 11/16 4 13/16	1 0	£2& rts F.13 96	1 0 0	50,000	W. Austral	4, Bishopsgate-st.
Royal Oak	2/3 2/9	2/9 3/3	5/-	—	0 5 0	400,000	Ha'raki, NZ	Dashwood House.
" Sovereign ...	1 1⅛	3¼ 3⅜	1 0	—	1 0 0	60,000	Coolgardie	8, Old Jewry, E.C.
Sherlaws	9/6 10/6	9/6 10/6	1 0	—	1 0 0	25,000	"	Broad Street Avenue
Scottish Australian	⅜ ½	⅜ ½	1 0	-/3 Aug., '95	1 10 0	200,000	N. S. Wales	Winchester Ho. E.C.
Scotty's Hauraki...	3/6 3/9	3/6 4/	5/0	—	0 5 0	330,000	Ha'raki, NZ	63, New Broad-street
Southern Star	1/9 2/3	1/9 2/3	2/6	—	0 2 6	600,000	Coro. N.Z.	63-4, New Broad-st.
South Kalgurli ...	1¼ 1⅛	1¼ 1⅛	1 0	—	1 0 0	60,000	W. Austral	20, Great Win. St.
Stray Shot & Excl	⅝ ⅝	⅜ ⅝	2/6	—	1 10 0	—	Pilb., W A	30, S. Swithin's lane
Success	3/6 4/	3/9 4/3	2/6	—	0 2 6	400,000	Coro. N. Z.	Dashwood House.
Taitapu G. Estate	3 3¼	3 1/16 3 3/16	1 0	—	1 0 0	125,200	Nelson, NZ	9, S. Mildred's Court
Tavern Creek	9/3 9/9	9/ 10/	10/	—	0 8 0	160,000	Ha'raki, NZ	Dashwood House,
Thames Hauraki...	1 1⅛	1 1⅛	1 0	—	1 0 0	300,000	"	54, Old Broad Street.
Tokatea of Hauraki	2/3 2/9	2/9 3/3	5/-	—	0 5 9	530,000	"	63, New Broad St.
Town Prop. of W A	1 3/16 1 5/16	1¼ 1⅜	1 0	—	1 0 0	250,000	W. Austral	28-9, S. Swithin's-ln
Triumph	2/- 3/-	2/- 3/-	5/	—	0 5 0	400,000	Ha'raki, NZ	Finsbury House.
True Blue	5/16 7/16	⅜ ⅞	1 0	—	1 0 0	—	"	Dashwood House.
Union Waihi	⅜ ⅝ pm	⅛ ⅜ pm	1 0	—	0 10 0	141,250	Tham's, NZ	11, Abchurch Lane
Victor Waihou ...	5/- 6/-	5/- 6/-	10/	—	0 10 0	340,000	K'rghk'NZ	63, New Broad St.
Victory (C.T.)...G	5/ 6/	5/ 6/	5/	—	0 3 4	40,000	Queensl'nd	82, Gresham-st., E.C

AUSTRALIAN AND NEW ZEALAND MINES—(*Continued*).

Name.	Closing Price. Sept. 18, 1896	Closing Price. Sept 11, 1896.	Am't. of Share	When last XD and Dividend	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
Waihi...... G	6¾ 7xd	6¾ 7	1/	2/- Sept 16,'96	1 0 0	180,000	Th'ams NZ	11, Abchurch-ln. E.C
" G. Junction...	1 1/16 1 3/16	1 1/16 1 3/16	1 6	—	1 0 0	110,000	U ThmsNZ	12, Finsbury Circus,
" Silverton	2⅜ 2⅝	2⅜ 2¾	1 0	—	1 0 0	60,000	Oh'n'miNZ	23, College Hill
Waitekauri	4¾ 5	5 5¼	1 0	—	1 0 0	136,000	WKauriNZ	11, Abchurch Lane
" Central	7/6 8/6	8/ 9/	10/-	—	0 7 6	130,000	"	63, New Broad St.
" Cross	1 3/16 1 5/16	1 3/16 1 5/16	1 0	—	1 0 0	130,000	"	19a, Coleman Street.
" Extended ...	9/ 10/	9/6 10/6	10/	—	0 10 0	130,000	Ha'raki, NZ	63, New Broad St.
" United	1 13/16 1 15/16pm	1 13/16 1 15/16pm	1 0	—	1 0 0	50,000	"	Finsbury House.
Waratah...... G	12/6 13/6	13/6 14/6	10/	—	0 10 0	100,000	Crydn, N Z	43, Threadneedle st
Water Trust Min.	¾ ⅞	½ ¾	1 0	—	1 0 0	120,000	W. Austral	Broad Street House
W. of Nations......	1 1/16 1 3/16	1 1/16 1 3/16	1 0	—	0 15 0	—	—	77, Bishopsgate-st.
Wentworth .... G	¾ ⅞	13/16 15/16	1 0	1/- Apl 15 '96	1 0 0	500,000	N. S Wales	4-6, Throgmort. Av.
W. A. Develop's.	15/16 1 1/16	15/16 1 1/16	1 0	rts May 14 '96	1 0 0	50,000	—	49-53, Moorgate court
W. Aust. G. Conces.	1⅝ 1⅝xd	1 9/16 1 11/16	1 0	2/6 Sept 16'96	1 0 0	£55,000	W. Austral	33, Old Broad st., EC.
W. A. Ex. & Fin.	4 5/16 4 7/16	4⅜ 4⅝	1 0	rts Mar. 27 '96	1 0 0	200,000	"	54, "
W-Australian G.F.	7⅝ 7¾	8¾ 9	1 0	6/- July 30 '96	1 0 0	65,000	Coolgardie	28-29, S. Swithin's ln
" " Mines Dvl	1⅛ 2 pm	1⅛ 2 pm	1 0	10/ Oct 30, 95	0 15 0	40,000	W. Austral	3, Princes Street
" Aust. Mining	7/ 8/	7/9 8/3	5/	7½d. Mar. 27'96	0 5 0	320,000	"	257, Winchester Ho,
" Aust. Pioneer.	1⅞ 2⅛pm	1⅞ 2⅛pm	1 0	10/ June 12 '96	0 15 0	19,993	"	139, Cannon-street,
" " Share Corp.	1⅛ 1⅝pm	1 11/16 1 13/16 pm	1 0	—	0 10 0	200,000	"	28, St. Swithin's ln
" " Venture......	2⅛ 2⅜ pm	2⅛ 2⅜pm	1 0	15/ Oct. 30 '95	0 15 0	—	"	3, Princes Street.
West Boulder	11/16 13/16	13/16 15/16	—	—	—	—	—	
White Feather ...	1⅞ 2	2 2⅛	1 0	—	1 0 0	60,000	Coolgardie	28 & 29, S. Swithin's ln.
Woodstock	2⅜ 2⅝	2 9/16 2 11/16	1 0	—	1 0 0	137,500	KrnghkNZ	6, Drapers Gardens.
Zeehan Montana S	par	par	1 0	-/4 Dec. 95	1 0 0	66,000	Tasmania	11, Queen Victoria st
" " ...	—	—	1 0	2½ Dec. 95	0 2 6	12,000	"	"

EUROPEAN MINES.

Name	Closing Price Sept. 18	Closing Price Sept. 11	Am't. of Share	When last XD and Dividend	Called up	Amount Issued	Situation	Head Office
Alamillos L	1⅜ 1⅝xd	1⅛ 1⅜	£2 0	2/- Sept 18 '96	2 0 0	35,000	Spain	6, Queen-street-place
Consett Ore	7¼ 7½	7⅛ 7⅜	1 0	5/- July 94	1 0 0	55,200	Spain	19, Grey-st, N'castle.
Fortuna L	⅞ 1⅛xd	⅞ 1⅛	2 0	1/3 Sept 18 '96	2 0 0	25,000	Spain	"
Libiola......C	2¼ 2⅛	2¼ 2½	5 0	4/- Apr. 29 '96	5 0 0	50,400	Italy	Dashwood Ho., E.C.
Linares L	4¾ 5¼	5⅛ 6	3 0	10/ Sept 16 '96	3 0 0	14,998	Spain	6, Queen-street-place.
Mason & Barry...C	2⅞ 3⅛	2⅞ 3⅛	5 0	2/ May 23 '94	5 0 0	185,172	Portugal	87, Cannon-street.
Pestarena ......G	4/6 5/6	4/6 5/6	3 0	—	3 0 0	67,809	Italy	6-7, Queen-street-pl.
Pontgibaud ......SL	—	—	20 0	11/6 Dec. '94	20 0 0	14,000	Coueron...	"
Rio Tinto C	23⅛ 23¾	23¾ 24	10 0	12/- May 9, '96	10 0 0	325,000	Spain	30, St. Swithin's-lane
" (1st Mrt. Bds)	103 105	104 105	100 0	4% July 1, 96	100 0 0	£3600,000	"	"
Ripanji ......SQ	—	—	1 0	—	0 19 0	95,000	Servia......	120, Bishopsgt-st. Wn
Tharsis......C Sul	6⅜ 5⅞	5¾ 6	2 0	7/- Apr 29 '96	2 0 0	625,000	Spain	Glasgow.
West Prus Pre.pref	—	—	10 0	3% June 30 '96	10 0 0	1,500	Germany	Walbrook Ho., E.C.
" Prussian Pre.	—	—	10 0	4% June 30 '96	10 0 0	5,450	"	"
" Prussian Or.	—	—	1 0	4% Dec. 31, '95	10 0 0	14,050	"	"
Wohlfahrt L	—	—	1 0	3% Dec. '94	1 0 0	99,634	Prussia ...	17, Victoria-st., S.W.
"	—	—	1 0	3% Dec. '94	0 10 0	9,090		"

NORTH AMERICAN MINES.

Name	Closing Price Sept. 18	Closing Price Sept. 11	Am't. of Share	When last XD and Dividend	Called up	Amount Issued	Situation	Head Office
Alaska Mexican...G	1⅛ 1¾	1¼ 1⅜	$5	4 4-5d. Feb., 96	$5	173,500	Alaska......	30, St. Swithin's-ln.
" Treadwell G	5 6⅛	5 5¼	$25	1/ June 30, '96	$25	200,000	"	" "
Anaconda C	6 9/16 6 11/16	6⅝ 6¾	$25	10% May 9, '96	$25	1,200,000	Montana...	" "
Arizona (Pref.) Cu	52/6 52/9	55/ 56/	4 0	1/6 July15,'96	4 0 0	158,920	Arizona ...	74, Geo.-st., Edinbor
" 6½ A Deben.	113	113½	100 0	6½% May14'96	100 0 0	£135,300	"	
" 7% B Deben.	101½	101½	100 0	7% May. 14 '96	100 0 0	£181,300	"	
De Lamar......GS	14/ 15/	12/6 13/6	1 0	1/- Feb. 13 '96	1 0 0	400,000	Idaho......	6, Drapers-gardens.
Dickens Custer GS	-/6 1/	-/6 1/-	1 0	—	0 19 9	420,000	"	Winchester Ho. E.C.
Doric......G	6/6 7/6	7/ 8/	5/	—	0 5 0	125,000	Colorado...	
Gen. M'g. Assoc. ...	5¾ 6¼	5⅞ 6¼	5 10	12/-May 14'96	5 10 0	27,469	C. Breton	Blomfield House.
Golden Feather G	5/16 7/16	5/16 7/16	1 0	—	1 0 0	180,000	California	St. Stephens Cs E.C
" Gate ......G	2/6 3/6	2/6 3/6	1 0	—	0 19 6	79,600	"	
" Leaf...... G	/9 1/3	-/9 1/3	1 0	—	1 0 0	300,259	Montana	8, Draper's Gardens.
Hall Mines	1⅝ 1⅞	1⅞ 2⅛	1 0	—	1 0 0	250,000	Brit. Col.	1, Leadenhall St., EC
Harquahala... .. G	1/ 2/	1/6 2/6	1 0	-/6Nov.14,'94	1 0 0	300,000	Arizona ..	6, Draper's Gardens.
Holcomb Valley G	/6 1/	/9 1/3	5/	—	0 5 0	540,000	California	14, Cornhill, E.C.
Jackson Goldfields	/3 /9	/3 /6	5 0	—	0 5 0	408,635	"	11, Poultry, E.C.
La Plata......S	/3 /9	/3 /9	5/	1/3 Oct. '82	0 4 6	405,000	Colorado	11, Poultry, E.C.
La Yesca ......GS	/9 1/3	1/- 1/6	1 0	—	0 19 6	200,000	Mexico ...	20, Bucklersbury, E.C
Montana......GS	4/3 4/9	3/9 4/3	1 0	-/3 June 26'96	0 19 0	657,158	Montana	Gresham House, E.C.
Palmarejo ......GS	2/ 2/6	2/ 2/6	1 0	—	1 0 0	418,888	Mexico ...	32, Old Jewry, E.C.
PinosAltos(Df) GS	⅛ 3/16	⅛ 3/16	1 0	-/6 Mar.' 90	1 0 0	100,000	"	110, Cannon-street.
Richmond ...GSL	⅞ 1⅛	1 1¼	5 0	1/- Dec. 16 '95	5 0 0	54,000	Nevada ...	44, Coleman-street.
St. George	/3 /9	/0 /6	5/	—	0 5 0	—	G.o'glaUSA	S. Geo Ho., E'cheap
Sierra Buttes ...G	⅜ ⅜	⅜ ⅜	2 0	-/3 Apr. 29 '96	2 0 0	122,500	California	138, Leadenhall-st.
" Plumas Eur. G	¼ ⅛	¼ ⅛	2 0	-/9 Apr. 29 '96	2 0 0	140,265	"	"
Springdale......G	/9 1/3	/9 1/3	$1	-/2 Sep. 28, 9	$1	1,000,000	Colorado	20, Abchurch Lane.
Twin Lake Placers	⅞ 1⅛	1⅛ 1⅜	1 0	3/- Feb. '95	1 0 0	6,000	"	5, Lawrence P. Hl. E

SOUTH AND CENTRAL AMERICAN MINES.

Name	Closing Price Sept. 18	Closing Price Sept. 11	Am't. of Share	When last XD and Dividend	Called up	Amount Issued	Situation	Head Office
Anglo-Chilian Pf N	8¼ 8¾	8¼ 8¾	10 0	7/0 Feb. 27 96	10 0 0	35,000	Antofagst.	123, Bishops.-st. W
" 6% Rylst MB	107 110	107 110	100 0	6% July 1 '96	100 0 0	£200,000	"	
Argen. Concessions	/6 1/	/6 1/	2/	—	0 2 0	150,000	S. Luis ...	3 & 5, Queen Street.
Caratal...... G	/3 /6	-/3 -/6	2/6	—	0 2 6	1,330,000	Venezuela	57, Moorgate-st. E.C
Caylloma......S	⅞ 1	⅞ 1	2 0	1/- Apr. 94	2 0 0	125,000	Peru	52, Leadenhall street
Colon ......G	-/3 /9	-/3 9/	5/	—	0 4 0	200,000	Colombia	5, Copthall-bdgs., E.C
Colorado Nit. ...N	⅜ 1	1 1⅛	5 0	2/6Dec.16,'95	5 0 0	32,000	Chili	12, King-st., Liverp'l
Colombian Hy...G	5/16 7/16	5/16 7/16	1 0	1/- Jy 26, '95	1 0 0	75,000	Colombia	10, Blomfield-street
Copiapo C	2¼ 2⅝	2¼ 2⅝	2 0	2/ May 29, '96	2 0 0	100,000	Chili	Dashwood House, E.C
Darien "A" ......G	6¾ 7	6¾ 7	1 0	—	1 0 0	49,553	Colombia	Manchester.
" "B"	7¼ 8	7¾ 8	1 0	x.nwApr 29'96	1 0 0	30,000	"	"
El Callao ......G	⅛ ⅜	⅜ ⅜	5 0	9½d. Feb. '94	5 0 0	257,600	Venezuela	8, Bishopsgt.-st. Wn
Frontino & B....G	1⅛ 1⅜	15/16 1 1/16	1 0	9d. July 15 96	1 0 0	128,662	Colombia	184, Gresham House
Glenrock ......G	1/3 1/9	1 6 2/-	1 0	—	1 0 0	199,948	Arg. (& I.)	3-5, Queen-street, E.C
Guadalupe ......GS	3/6 6/	3/6 5/-	1 0	—	1 0 0	120,000	Honduras	1a, Union ct. Old Brd
Javali ......G	1/6 2/6	/6 1/6	2/-	—	0 2 0	105,269	Nicaragua	139, Cannon-street.
Lagunas ....N	2¼ 2⅛	2¼ 2½	5 0	15p.c. Dec.'94	5 0 0	120,000	Tarapaca	3, Gracechurch st;
Lautaro ......N	5⅛ 6	5⅛ 6	5 0	5/- June 26 '96	5 0 0	110,000	Chili	70, "
Liverpool ......N	8 9	8 9	5 0	15/- May 14, 96	5 0 0	22,000	"	Liverpool.
London Nit......N	1¾ 2¼	1¾ 2¼	3 0	3/4¾ Nov. '95	5 0 0	10,000	"	9, Gracechurch-st.
" Nit.(Pref.)	3 4	3 4	5 0	5% Nov. 28'95	5 0 0	22,000	"	"
Macate	-/3 /6	/3 /6	2/	—	0 2 0	200,000	Peru	11, Old Broad-st. E.C
New Tamarugal N	1/16 3/16	1/16 3/16	1 10	1s. Dec. '94	1 10 0	130,000	Tarapaca	50, Lime-street, E.C
" 8% Cum Pref	5/16 7/16	7/16 9/16	1 10	8 p.c. Feb. '95	1 10 0	130,000	"	"
" 6 p.c. Debs ...	73 82	78 82	100 0	6 p.c. Feb. '96	100 0 0	£260,000	"	"
Orita......G	/9 1/3	/9 1/3	1 0	1/- April '88	1 0 0	30,000	Colombia	10, Blomfield-street
Ouro Preto ......G	—	—	1 0	1/- Feb. '96	1 0 0	60,000	Brazil	6, Queen-street-place
Pac. & Jaspampa N	¾ 1	⅜ 1	5 0	4/- May, '95	5 0 0	72,000	Tarapaca	3, Gracechurch-st.
Phoenix	/3 -/9	-/3 -/9	10/-	—	0 8 0	400,000	S. Luis ...	3 & 5, Queen Street.
Quebrada C	⅛ ¼	⅛ ¼	3 0	5% Mar. '92	3 0 0	241,956	Venezuela	34, Nicholas Lane.
Rosario ......N	4¾ 5¼	4¾ 5¼	5 0	3/- Aug.13 '96	5 0 0	120,000	Chili	7½ OldBroad-stree
" (5% Deb.)	104 107	104 107	100 0	5% Apr. 1 '96	100 0 0	£475,000	"	
" Hu'r'Db Scrp	103 106	103 106	100 0	5% July 1 '96	100 0 0	£200,000	"	"
St. John del Rey G	¾ 1	¾ ⅞	1 0	x.rtsNov 13 '95	1 0 0	327,650	Brazil	Finsby.Ho., Blmf'd st
San Donato ... ...N	⅜ 1¼	⅜ 1¼	5 0	2/6 May 24 '95	5 0 0	32,000	Chili	12, King-st., Liverp l
" Jorge ......N	5¼ 5¾	5¼ 5¾	5 0	7/6May. 29 '96	5 0 0	75,000	"	9, Gracechurch-st
" Pablo ......N	1⅛ 1¼	1⅛ 1¼	5 0	5/-Oct. 30 '95	5 0 0	32,000	"	
" Sebastian ...N	1 1¼	1 1¼	5 0	2/ July 15 '96	5 0 0	29,000	"	Dashwood House E.C
Santa Barbara ...G	⅛ 3/16	⅛ ⅜	10/	1/3 Dec. '86	0 10 0	60,000	Brazil	Liverpool
" Elena ......N	⅛ ⅜	⅛ ⅜	5 0	5/- Nov. 15 '94	5 0 0	22,000	Tarapaca	3, Gracechurch-st.
" Rita ......N	2¾ 4¼	3¾ 4¼	5 0	10/May 29 '96	5 0 0	20,000	Chili	DashwoodHouse, E.C
Tolima "A" ......S	4⅛ 5⅛	4⅛ 5⅛	5 0	5/-Mar. 12 '96	5 0 0	14,000	"	18, Finsbury-circus
" "B" ......S	4 5	4 5	5 0	5/- Mar 12 '96	5 0 0	6,000		

STATISTICS OF COPPER.

(From Messrs. Henry R. Merton and Co.'s Circular for August, 1896.)

	Sept. 15, 1896.	August 31, 1896.	August 15, 1896.	31st August.		
				1895.	1894.	1893.
STOCKS IN ENGLAND AND FRANCE:—	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Liverpool and Swansea, Chili Bars	24,398	24,335	24,655	40,472	34,077	29,681
" " Chili Ingots	174	185	185	510	830	92
" " Chili Ores and Regulus (fine)... ...	—	—	—	2	14	403
" " other Stuff (fine)	*3,834	3,739	3,428	6,257	7,372	3,669
London (including landing)	1,525	1,339	1,010	2,920	5,182	5,159
Stocks of fine Copper in Havre, Rouen, Bordeaux, and Dunkirk	1,138	926	1,377	1,371	1,332	5,007
	31,069	30,524	30,655	51,532	48,807	44,011
ADVISED FROM CHILI by mail and Cable, Fine Copper	4,100	3,750	3,200	2,700	2,650	3,200
" " AUSTRALIA by Mail and Cable, Fine Copper ...	1,100	1,100	1,400	1,200	950	750
	36,269	35,374	35,255	55,432	52,407	47,961
Price of Chili Bars and G.M.B.'s, per ton...	£48 0 0	£47 2 6	£47 15 0	£47 0 0	£40 7 6	£41 12 6

* Including 765 tons English Cakes.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes September 17:—The continued dulness of tin and heavy shipments preclude all enquiry for shares, with almost a cessation of business. To-day tin shows more firmness. Quotations:—Basset United (Limited), 15s. to 16s.; ditto (5s. paid), 4s. to 4s. 6d.; Blue Hills, 1s. 6d. to 2s.; Carn Brea United (Limited), 1s. 6d. to 2s.; ditto (2s. 6d. paid), 2s. to 2s. 6d.; Devon Consols, 17s. 6d. to 18s. 6d.; Dolcoath (Limited), 18s. to 19s.; ditto (7s. 6d. paid), 6s. to 6s. 6d.; East Pool, 1¼ to 1½; Killifreth (Limited), 1s. 6d to 2s.; Levant, 2¾ to 3; Polberro, 6s. to 7s.; West Kitty, 2 to 2½; Wheal Grenville, 5¾ to 6; Wheal Kitty, 5s. to 6s.

Messrs. ABBOTT and WICKETT, Stock and Share Brokers and Mining Share Dealers, Redruth, write under date of September 17:—No improvement can be reported in the Mining Market, and, although shares are not being offered, it is evident that there are very few buying orders. Quotations herewith:—Blue Hills, 1s. to 2s.; Basset Mines (fully paid), ⅜ to ½; ditto (5s. paid), 4s. to 5s.; Dolcoath (fully paid), 18s. to 19s.; ditto (7s. 6d. paid), 5s. to 6s.; East Pool, 1 to 1¼; Killifreth, ¼ to ⅜; Polberro, ¼ to ½; West Kitty, 2 to 2½; Wheal Grenville, 5¼ to 6; Wheal Kitty, ⅛ to ¼; Wheal Metal (3s. paid), 3s. 6d. to 4s.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write September 17 (noon):—Unfortunately our report was missed posting last week, and arrived too late for publication. We may say that up to our report to noon a week ago, markets on the whole had stood up well. The advance in the Bank Rate (coming suddenly) had brought in a factor which had put values back distinctly; this being reported in our "Later, 4.0 p.m." item. Since then, with rallies here and there, markets have been entirely demoralised, and the record for this week is an unbroken list of declines, most of which are many points lower, and the only exception is a big rise in Metropolitan Districts, on matters peculiar to themselves or their proposed duplication of line below their own. The brunt of the fall which has occurred during the past week has been borne by the "gilt-edged" securities, Consols, railway debentures, and preferences and others of a similar nature, for which, up to a week ago, sellers did not know how high prices to ask, have run down from their high figures pretty smartly, and ordinary stocks have also come in for severe depreciation. The changes in the active stocks will readily be seen from the details given below. Although Americans have had some fluctuations, the balance of change in all cases is in the downward direction, still the declines herein are slight compared with those in the home railway market. The influences affecting home rails are very much more direct than as regards their effect on American securities, indeed, if the worst came to the worst, doubtless Americans would gain at the expense of Europeans. Canadians show Pacifics $1½, and Trunk Second Preference ⅜ to 1, with the other issues also fractionally lower. Consols in the turmoil have lost in value 1⅛ to 2 per cent. after some little rally from lowest points. This stock is not quite such a "steady" market as it was years ago, for with the very cheap money it has been possible to use Consols as a speculation. Now when the price of money has got so near the return of Consols, the rush to obtain the big prices they have attained has brought them down sharply, part of the drop occurring last week and part this. The amount of fall we chronicle is, however, that which has occurred this week. Colonial stocks, &c., have shared in the general decline, and falls ranging from 1 to 3½ are all the alterations we have to record. Corporation stocks and debentures, too, mark lower all round, the appreciation in this class generally having been very marked for some time past. In the declines Newcastle 3½ per Cent. show up distinctly, and Southport 3½ per Cent. are exceptional with rise of 1. Foreigners, as may be expected under the circumstances, are all lower where altered, as will be seen hereunder. In the rush of doings on the major markets miscellaneous classes have been rather neglected. As regards changes these have not come "into the vortex," but as a matter of fact the majority, though a small one, of alterations is against holders.

ENGLISH RAILS.—Higher: Districts, 4½.—Lower: Caledonians, 2; ditto Deferred, 2½; Great Eastern, 2⅜; York Deferred, 1⅜; Great Westerns, 4⅜; Lancashire and Yorkshire, 4½; Brighton A, 6½; Chathams, ⅝; London and North-Western, 5⅜; Sheffield A, 1⅜; Midlands, 5; North British Deferred, 2½; Berwicks, 4½; Dover A, 2½.

CANADIANS AND AMERICANS.—Lower: Atchisons Ordinary, ½; Atchisons Preference, ⅛ to 1⅛; Canadian Pacific, 1½; Grand Trunk Ordinary, ⅛; Grand Trunk Guaranteed, ¼; Grand Trunk First Preference, 1½; Grand Trunk Second Preference, ⅜ to 1; Grand Trunk Third Preference, ⅛; Mexican Rails, ⅛; Mexican First Preference, ⅛; Mexican Second Preference, 1; Central Pacific, ⅜; Milwaukees, 1; Denvers, ⅜; Denver Preference, 1½; Louisvilles, ½; Missouris, ½; New York Centrals, ½; Erics, ⅛ to ¼; Ontarios, ½; Norfolk Preference, ½; Readings, ⅛ to ½; Union Pacifics, ⅜.

CONSOLS.—Lower: Two and Three-quarter per Cent., 1⅛ to 2.

COLONIAL STOCKS, &c.—Lower: Canada Registered, 1 to 2; Cape of Good Hope Registered, 1; New South Wales Inscribed, 2; New Zealand Inscribed, 3½; Victoria Inscribed, 3½.

CORPORATION STOCKS AND DEBENTURES.—Higher: Southport Three and a-Half per Cent., 1.—Lower; Birmingham Three and-a Half per Cent., 1; ditto Three per Cent., ½; Hull Three and a-Half per Cent., 1; Liverpool Three and a-Half per Cent., 1½; Newcastle Three and a-Half per Cent., 8; Stockport Three per Cent., ½.

FOREIGNERS.—Lower: Spanish Four per Cent., ¼; Argentine Six per Cent., 1½ to 2; ditto Five per Cent., 2½; Brazilian Four per Cent., ⅛ to 1⅛; Egyptian Unified, ½; Italian Rentes, ⅛; Mexican Six per Cent., 1; Portuguese Three per Cent., ⅜; Uruguay Three and a-Half per Cent., ⅛.

BANKS.—Higher; Adelphi, ½; Bank of Liverpool, ½; Parr's and Alliance, ½.—Lower; Imperial Ottoman, ¾; Mercantile of Lancashire, 1-16; W. D. and Manchester and Salford, ⅛.

INSURANCE.—Higher: Lancashire and Yorkshire Accident, 1-16; Thames and Mersey, ½.—Lower: Lancashire, 1-16; Liverpool, London, and Globe, ⅛; London and Lancashire, ⅜; Maritime, 1-16; Royal, ⅜; Sea, ½.

COAL, IRON, &c.—Higher: Bolckow, (£20 paid), ½.—Lower: Bolckow (£12 paid), ⅜; ditto Preference, ½; Sheepbridge B, ½.

TELEGRAPHS AND TELEPHONES.—Eastern Preference, ½; West India and Panama, ½.—Lower; Anglo-American Deferred, ½; ditto Preference, ½.

BREWERIES.—Lower: Allsopp's, 5.

MISCELLANEOUS.—Higher: Brooke Bonds, ½; Cunard Steam, ½; Manchester Royal Exchange, 2; Pacific Steam, ⅜; United Alkali, 3-16 to ¼.—Lower: Bradbury's, ½; Bryant and May, ½; Coats, 2; Eastmans, ½; Jones' Sewing, ½; Salt Union, 1-16; Gas Light A, 5; Northern Assets, 6; Manchester Carriage A, ½; Suez Canal, 1.

LATER (4 P.M.).—Markets began badly awaiting the pronouncement of the Bank of England directors regarding the official minimum, otherwise the Bank Rate. When it was announced that no change was made markets plucked up a little strength, but as the public held aloof irregularity was apparent down to the official close of business.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (September 17), writes:—During the past week the markets have been unsettled, owing to the upward tendency in the money market and the disturbed state of affairs in the East. Transactions now entered into are for new account, September 30.

In shares of coal, iron, and steel, companies' prices are generally lower. Marbella are at 27s. 6d., Niddrie 41s. 6d., and Steel Company of Scotland 103s. 9d.

In shares of copper concerns prices are also easier, in sympathy with the market for the metal. Arizona have touched 53s., Mount Lyell 8⅜, Tinto 23⅜, and Tharsis 114s.

In shares of gold and silver mines a fair amount of business has been done. Notwithstanding the Randt record return for August, and the improving position of affairs in Rhodesia, prices are generally lower. Chartered have declined from 67s. 3d. to 60s.; Consolidated, have touched 12 9-16; East Rand, 16 15-16, and Randfontein, 54s. 6d.; and all show very little recovery. Lisbon Berlyn are also lower, as the company's transport work is being delayed by rinderpest. The principal feature has been the rise in African Recovery shares, which touched 59s. on rumours that the legal decision at Pretoria had been given in the company's favour. In sympathy, Cassel and Australian Recovery have both advanced. The meeting of Hampton Plains is to be on October 1. Sheba Gold will pay a dividend of 1s. on October 5. Afrikander are at 34s. 6d; African Estate, 33s. 6d.; Balkis Land, 5s. 6d.; Bonnie Dundee, 8s.; Bantje's, 71s. 3d.; Barrett, 15s. 6d. Broken Hill, 49s. 6d.; Brownhill Proprietary, 8s. 6d.; Block B, 36s. 3d.; Croydon Consols, 8s.; Cripple Creek Gold Fields, 8s. 9d.; Consolidated Murchison, 13s. 6d.; De Lamar, 14s. 6d.; East Orion, 4s. 6d.; Emma, 2s.; Glenrock, 1s. 9d.; Gold Fields of Mozambique, 22s. 6d.; Hainault, 51s. 3d.; Hannan's Oroya, 36s. 3d.; Hannan's Napier, 15s.; Hannan's Star, 26s. 3d.; Hannan's True Blue, 12s.; Hauraki, Associated, 6s. 3d.; Heidelberg, 2s. 9d.; London and Globe Finance, 90s.; Lady Shenton, 52s. 6d.; La Plata, 9d.; Leechdale Rhodesian, 10s.; Langlaagte Royal, 45s.; Langlaagte Star, 30s.; Murchison New Chums, 7s. 6d.; Macate, 1s. 3d.; Mount Charlotte, 25s.; McCulloch's Coolgardie, 3s.; Mallina, 9d.; Massi Kessi, 9s.; Orion, 15s.; Otto's Kopje, 1s. 3d.; Paarl Central, 27s. 6d.; Pestarena, 5s. 3d.; Porges, 31s. 3d.; Pilbarra, 12s. 6d.; Rhodesia (Limited), 25s.; Rhodesian Claims, 15s.; Royal Oak, 2s. 9d.; Silati Gold, 2s. 6d.; Sheba Queen, 5s. 6d.; Southern Lands, 8s.; Taitapu Estate, 61s. 3d.; United African Land, 6s. 6d.; United Rhodesia, 13s.; Violet, 23s. 9d.; West Australian Gold Concessions, 31s. 3d.; Waratah, 13s. 9d.; and Waterfall Estate, 13s.

In shares of miscellaneous companies there is not much alteration to notice. Oil companies shares are firmer. Broxburn are at 8½, Pumpherston 5⅛, and Young's 29s. Glenboig Fire Clay are at 8⅛. Nobel's Dynamite lower at 18½.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of September 17:—Since last week's report there has been a heavy depreciation in securities. Consols, home railways, and foreign bonds have participated in the fall. The advance in high-class securities, such as railway debenture and preference stock, has been arrested, and these have been offered at reduced prices. Caledonian Railway deferred has fallen from 59¾ to 58⅛, North British from 47 15-16 to 45⅝, Glasgow and South-Western from 139½ cum to 133½ ex dividend of £2 10s. Insurance shares have been very inactive. North British and Mercantile have changed from 38 15-16 to 38⅛, Standard Life from 56 to 56½, Royal from 55½ to 54½. In Scottish Bank shares Commercial have declined from 76½ to 75, Union from 22 11-16 to 22½. A fair business has been done in British South Africa Chartered shares, which have fallen from 66s. to 60s. 6d. The shares of the Cowdenbeath Coal Company and of the Fife Coal Company have been in demand on a rumour that an amalgamation of the two companies is likely to take place. The former have advanced from 16½ to 20, the latter from 17½ to 20½. Arizona copper shares have declined from 55s. to 52s. 9d., Rio Tinto from 24½ to 23 9-16. Steel Company of Scotland shares have changed from 5 3-16 to 5¼. Stewart and Clydesdale from 13 15-16 to 13⅜; Young's Paraffin from 26s. to 28s. Distillers have receded from 22½ to 21, J. and P. Coats from 60½ to 59½.

Messrs. JOHN STEVENSON and COWPER'S weekly report, dated September 17, states:—The pig iron trade presents at present no features of particular interest. After the settlement of the difference with the shipbuilders' engineers, which threatened to paralyse that department of trade throughout the country, it was expected that there would be a rebound in prices, but this has not happened to the extent anticipated. In view of the very large demand for crude metal, both for home consumption and export, this is disappointing, and can only be accounted for by financial, political, and speculative influences, added to the consideration of an output which will prove to be excessive on the reduced shipments, which may be looked for later in the season. Exports from this district amounted to 72,932 tons up to yesterday, which is considerably in excess of last month's record figures. Middlesborough G.M.B. No. 3 is 38s., No. 1 39s., and foundry 4 and forge 37s. and 36s. 6d. respectively. Hematite is 45s. 6d. for prompt, and contracts for forward delivery have been made at 1s. more. There is no change in quotations for finished iron and steel, and shipbuilding orders for the latter are not satisfactory, owing to a falling off of requirements, and the cutting prices at which steamers are being built. Best Rubio ores are selling at 13s. c.i.f. Tees. Coke maintains its price of 13s. 3d. at furnace, and coal shows no improvement. The Glasgow market closed this afternoon, "steady, small business." Scotch, 46s. 3d.; Cleveland, 38s. 2d.; Cumberland hematite, 47s. 2d.; and Middlesborough hematite, 45s. 2½d. cash sellers.

Messrs. BARRY, HEAD, and Co.'s weekly report states:—Prices remain much as last reported. The market is strong and hopeful, and we expect to see higher prices ere long.

MINING IN CORNWALL AND DEVON:

NOTES ON MINING IN THE WEST.

(FROM OUR OWN CORRESPONDENT.)

CARN BREA and TINCROFT shareholders have no reason to be despondent over the prospects of the company. The report of the directors laid before the statutory meeting on Friday shows that on the shares allotted there is a capital of £35,000, and steps are being taken which, it is believed, will result in at least £20,000 more being raised. The directors consider that this capital will be ample for the development of the mines. It is satisfactory to note that the error of starving the mines during the period of depression is not likely to be made, the directors, while pledged to prevent waste and to effect all reasonable economies, recognising that there can be no hope of permanence without vigorous development. Mr. Foster Brown, who has accepted the position of consulting engineer, has made a thorough inspection of the mine, and his recommendations have been adopted without alteration by the directors. As a result, all unprofitable stopes are to be stopped as early as possible, due regard being paid to the retention of the best of the workmen. North Tincroft is to be worked so long as it can be made to pay its way, and to defray a due portion of the establishment charges. In Carn Brea much important development work is to be done, and in the Tincroft and Cook's Kitchen parts of the sett exploration is to be systematically carried on. If the programme sketched in the report is followed, valuable discoveries ought to be made ere long in more than one portion of the company's valuable property, and a sufficient amount of ore should be raised to enable the mines to be worked at a profit even at the present low prices.

PROSPECTS at Blue Hills are again more hopeful. A rich course of tin in the eastern of the two winzes below the 80 fathom level, which was struck more than a week ago, continues to produce valuable stuff, and is now valued at £40 a fathom. With such a prospect it would be folly to abandon the mine, and it is not likely that Blue Hills will join the list of abandoned concerns for some time to come.

GENERAL McLEOD INNES, the Chairman of Great Work (Limited), had a cheering tale to tell the shareholders at the first statutory meeting. Operations were started on July 21, and everything was in such good order that on July 28 they commenced pumping at the rate of 1,000,000 gallons per day. The mine was drained 30 fathoms below the adit on August 18, and on August 31 below the roof of the 40 fathom level. This point reached, the company is in a position to profit by the expenditure made by the late company, which laid out £8000 to enable them to reach that depth, and was then compelled to suspend operations. Some rich stones of tin have been broken at the point now reached, and there is no doubt the mine will soon be in a position to make good returns of ore. In the interests of the district and of the county it is earnestly to be desired that Great Work shall be ranked among the successful mining ventures of Cornwall. A fortunate issue of the new company's venture would doubtless result in the attention of capitalists being again turned to some of the other Breage mines now lying idle, but which are believed by many competent judges to be not inferior in richness to the best of the setts in the Carn Brea district.

MINING in East Cornwall is not yet dead. Work has recently been commenced on the Treloweth Mine, near St. Austell, and 2 tons of tin were sold last week to the Consolidated Smelting Company. The sett adjoins South Polgooth.

THE rumoured intention of the South Condurrow executive to shortly suspend operations has caused considerable consternation in Troon, where most of the hands employed reside. For some time operations have been undergoing a process of gradual curtailment, and it has been understood that the present shareholders, who have done very well out of the mine in the past, had no intention of entering upon a long period of call paying. South Condurrow is not a mine which is likely to attract the promoters of new Limited Liability companies, and it is to be feared that its final closing down cannot in any event be long delayed. The mine has paid dividends amounting to about £100,000. Operations have for some time been confined to the eastern portion of the sett, which has produced about enough tin to pay expenses, but the levels have now been driven close up to the West Frances boundary. The western portion of the mine is let to the Camborne mining school for the use of students.

Mr. J. F. CONNOLLY, who has returned to town from the Barima district, says the *Demerara Daily Chronicle*, where he has been superintending operations on the property of the Winter Syndicate, brought with him some wonderfully rich specimens of quartz from the reef, 2 feet thick, which has been exposed on the syndicate's claims for 400 feet, and which, he is of opinion, is a continuation of the rich reef "C," the bonanza of the Barima Company. The greater part of these rich specimens were taken to England by Mr. R. A. Wood, an expert who recently visited the property, but we had the privilege of viewing a small specimen containing more gold than quartz. Mr. Connolly said there was no reason to "boom" phenomenal quartz—if it comes, as in the Barima, well and good. "Ore yielding 1 ounce to the ton," he said "is rich enough for me." This is the return upon which he based his original calculations in regard to the Barima company's property, and, in the light of recent events, he may pertinently ask whether he was over or under the mark when he did so. The Winter Syndicate, he assures us, has a great future before it.

A NOTE ON THE MISSING CARBON.

By T. W. HOGG (Newburn Steelworks).

In his recent valuable paper on the hardening of steel, Mr. H. M. Howe uses the term "Missing Carbon" to denominate that portion of the carbon existing in water-quenched steel which is found by taking the difference between the Eggertz colouration test in the normal or annealed steel and that found in the same steel in its hardened condition. That the difference of colour intensity of solutions of the same steels annealed and hardened is due directly to a peculiar modification of carbon, or of a carbide of iron present in rapidly cooled steel, is certain, but the precise nature of this modification has still to be discovered.

Whatever this modification may be, the carbon concerned in it is capable of exact measurement in this way, and, although the late J. S. Parker noticed that there was an important difference in the colouration tests obtained in hardened and annealed steel, the writer was the first to use this as a rough measure of the quantity of carbon in the hardening state, and attention was directed to this by Mr. J. W. Spencer in the *Journal of the Iron and Steel Institute* (1890), No. II., p. 413. I am not aware that Osmond and Werth described this fact previously.

When iron is treated with nitric acid a whole series of complex reactions may present themselves, depending upon the relative proportions of the two substances towards each other. When the nitric acid is in excess, and the proper conditions as to temperature and strength of acid observed, we may have formed ferrous nitrate, ferric nitrate, and ammonium nitrate. If the acid is extremely dilute there is no disengagement of gas, as the strength of the acid is increased, hydrogen is given off, and then, with a still stronger acid, the three gases nitrogen, nitrous oxide, and nitric oxide are given off together in variable proportion, these being the product of the action of hydrogen, nitrosidic acid (hyponitrous acid), and hydroxylamine upon each other. When the iron is in excess there are formed successively hydrated peroxide of iron, hydrated protoxide of iron, and, finally, black magnetic oxide itself, with complete conversion of the original nitric acid into free ammonia.

On treating steel with an excess of nitric acid of moderate strength, the freshly liberated or nascent carbon or carbide enters into combination with the gases evolved at the same time. A nitro-carbon compound is thus formed, which passes into solution upon the application of heat with the well-known brown colour. A further continued application of heat causes complete destruction of this colouring matter, with the slow evolution of carbonic acid gas, small quantities of cyanogen compounds, and a colourless viscid decomposition product. The characteristic appearance of the products of the action of moderately dilute nitric acid upon slowly cooled, cast, and rapidly-cooled steels, disappears with the use of a large excess of extremely dilute cold acid, which causes the separation of the whole of the carbon in the amorphous form, free from iron and containing only a very small proportion of occluded nitrogen oxides.

The following nitro-carbon compounds, yielded by the same steel, a 1 per cent. carbon steel, in its cast and annealed condition, were obtained by treating the steel in the form of borings with a large excess of nitric acid (1·2 specific gravity) and preventing any rise in the temperature by surrounding the containing vessel with cold water.

The compounds filtered off and dried over concentrated sulphuric acid have the following composition :—

	Annealed.		Cast.
Iron	73·73	...	2·54
Carbon	8·13	...	49·41
Water	7·26	...	22·40
Nitrogen...	3·20	...	8·25
Oxygen (by difference)	7·38	...	17·40
Total	100·00	...	100·00

By treating ferro-manganese in the same manner the nitro-carbon compound separated had the following composition :—

Carbon	40·36
Water	35·73
Nitrogen	9·50
Mineral matters...	7·80
Oxygen (by difference)...	6·61
Total	100·00

In these analyses, the water obtained in the combustion has not been calculated to hydrogen, and this, it would appear, is present to a considerable extent not in combination with oxygen. After spending some time over this point I found that these nitro-compounds are subject to gradual decomposition, even at the ordinary temperature. The kind of action which takes place is shown in the following experiment, wherein a current of pure dry air was passed over the substance for half an hour at each temperature. The nitro-compound obtained from ferro-manganese was in this case air-dried only, and the weight lost is compared with the gain in the potash bulbs and calcium chloride tube :—

Heated to	80° C. Per cent.	100° C. Per cent.	130° C. Per cent.	160° C. Per cent.
Total loss	3·1 ...	16·35 ...	22·75 ...	38·75
Absorbed in $CaCl_2$	2·1 ...	10·65 ...	14·55 ...	19·7
Absorbed in KHO bulbs ...	1·2 ...	6·25 ...	8·90 ...	18·7
Total gain	3·3 ...	16·9 ...	23·45 ...	38·4
Increase over loss	0·20...	0·55 ...	0·70 ...	—

The experiment at 160° C. was spoiled, owing to the substance suddenly decomposing with slight violence. Another experiment was conducted, using the substance previously dried over sulphuric acid.

Substance heated to 150° C. :—

	Per cent.
Loss of weight	25·37
Absorbed by $CaCl_2$	12·85
Absorbed by KHO...	14·85
	27·70
Increase over loss of weight	2·33

The potash, after these absorptions, contained small quantities of cyanogen, and only a portion of the total gain is due to carbonic acid. Supposing the total increase in weight of the KHO bulbs was due to the oxidising action of the air, the increase over the loss of weight of substance should be 10·80 per cent. Most of the absorption is evidently due to the gradual evolution of nitrogen oxides.

The whole of the nitro-compounds separable from steels in varying conditions are of a very unstable character. The ordinary strength of nitric acid—viz., 1·2 specific gravity, used for colouration tests gives, however, results which are sufficiently distinctive to allow of the following classification :—

Conditions of carbon in steel.	Action of cold acid.
(*a*) Amorphous carbon...	Black, insoluble.
(*b*) Normal carbide.....	Black, magnetic, insoluble.
(*c*) Dissolved carbide ...	Brown, insoluble nitro-carbon compound.
(*d*) Unknown carbide ...	Either immediately decomposed as CO_2, or forms a colourless compound.

Although all ordinary cast, hammered, or rolled steels give a small amount of carbon, insoluble in hot dilute hydrochloric acid, I do think that this is also insoluble or undecomposable by nitric acid; it is only in particular cases, such as "black file steel," or well annealed high carbon, with low manganese, that the condition (*a*) sometimes makes its appearance. As this is in steels well below the limit of saturation with carbon, it is not easy to understand how it can exist. According to what is known with regard to cementation, it seems most improbable that free amorphous carbon could continue to exist for any length of time without entering into combination with the iron. This amorphous carbon is not attacked by any ordinary treatment with the hot acid. The black magnetic substance separated by the cold acid in the condition (*b*) is decomposed by hot nitric acid, the iron passing into solution, and the brown nitro-carbon compound then formed also dissolves. In the condition (*c*), which I consider characteristic of dissolved carbide (dissolved in the steel), the brown nitro-carbon compound is formed at once by the cold acid. In the condition (*d*), all the evidence we have at present points towards this as being identical with the so-called hardening carbon.

In the following table I give a list of ascending carbon steels which I have selected from a large number of cases. As a rule, these steels have all been hardened in cold brine, and, to obtain the maximum hardening effect, plates of about ¼ inch thick were used. The percentage of manganese in these steels varied between 0·4 and 0·6. The colour tests in the hardened steels, with one or two exceptions, were all obtained by hammering them until they disintegrated into splinters; the splinters were then tested against drillings from the same bars in their hammered normal condition.

Column 1 gives the actual carbon by combustion.
Column 2 shows colour test of the hardened steel.
Column 3 shows percentage of "missing carbon."
Column 4 shows the percentage of missing carbon with regard to total carbon present.

Column 1. Per cent.	Column 2. Per cent.	Column 3. Per cent.	Column 4. Per cent.
0·10	0·06	0·04	40·00
0·14	0·10	0·04	28·57
0·21	0·10	0·10	47·62
0·25	0·13	0·12	48·00
0·30	0·17	0·13	43·33
0·35	0·17	0·18	51·43
0·39	0·23	0·16	41·02
0·45	0·25	0·20	44·44
0·50	0·28	0·22	44·00
0·62	0·41	0·21	33·87
0·70	0·35	0·35	50·0
0·75	0·32	0·43	57·33
0·84	0·35	0·49	58·33
0·92	0·41	0·51	55·43
1·00	0·50	0·50	50·00
1·25	0·74	0·51	40·82
1·50	1·10	0·40	26·66
1·64	1·33	0·31	18·90
1·70	1·35	0·35	20·58
2·40	2·10	0·30	12·50
3·10	2·82	0·28	9·03
6·50	6·50	0·00	0·00

The alloy containing 3·1 per cent. contains only traces of amorphous carbon, manganese, and silicon.

The last figures are obtained from a sample of ferro-manganese. The rapid cooling does not appear to affect the carbon in this alloy.

It is noteworthy that, on comparing the percentages of "missing carbon" with regard to the total carbon present, the steels which seem to be able to retain the largest proportion of their carbon in this peculiar condition are, with one or two exceptions, those which lie between 0·70 and 1 per cent.

The various questions of a purely physical nature concerned with the phenomena of hardening are now increasing so rapidly that, for the time being, the chemical side is receiving a somewhat disproportionate share of attention. Probably this may be on account of the generally limited nature of the kind of chemical examination which has to be resorted to. Bearing in mind that the few facts of a purely chemical nature which are known to be intimately related to the physical results are based upon the effects of retarded or accelerated solution, the writer feels confident that, although the labour may at first sight appear to be great in proportion to the results obtained, in time some simple chemical discovery will do much towards rendering the hardening of steel easier to understand.

RAND CENTRAL ELECTRIC WORKS.

Report of the directors to be presented to the shareholders at the annual ordinary general meeting:—The directors have the pleasure of presenting to the shareholders their report and the annexed accounts of the company for the period of 15 months ended June 30. The statutory meeting of the company was held on July 30, 1895, since when three calls of 5s. each have been made, in order to meet the payments becoming due to the contractors, Messrs. Siemens and Halske, for the erection of the works at Brakpan, and the shipment of plant and materials for the main line and mine installations. During the period under review £116,306 0s. 2d. have been expended in compliance with the obligations under the equipment contract. The directors have been able to place the sums not immediately required on deposit at satisfactory rates. The interest thus earned up to June 30 amounts to £2999 4s. 10d., as it appears in the balance-sheet. The cession of all contracts entered into by Messrs. Siemens and Halske prior to the formation of the company having been duly completed and registered at Pretoria, the fully paid 25,000 vendors' shares in respect of, and in payment for, such contracts were issued in April last. The political troubles in the South African Republic during the early part of this year have somewhat hampered negotiations for the supply of electric power. Contracts, however, for amounts aggregating about 1200 brake horse-power have been practically completed. Other negotiations are in progress, as a result of which the directors anticipate that the remaining available capacity will be placed. The total capacity provided for in the equipment contract is 2100 brake horse-power. The building operations at Brakpan (Central station) were commenced about September 1, 1895, and up to the middle of August, the date of the last report to hand from Mr. N. J. Singels, the general manager, the iron structure for the engine house, as well as buildings and several houses for the staff, were completed. The engine house has already been roofed for the greater part, and about half the walls have been covered with corrugated iron. The foundations for the boiler house and the two first engines were also ready. The branch railway line from the Netherlands Railway to the Central station is completed, and has already proved to be of good service, especially for the transit of the plant and heavy machinery. About 900 iron poles have been erected for carrying the main wire, which is to run from the Brakpan works to the Paardekraal farm and the laying of the wires has been commenced at the Brakpan end. The unfortunate labour conditions in the Transvaal during the first few months of this year have necessarily caused some unforeseen delay in the erection of the works. Some further delay has arisen owing to a recent railway accident at Boksburg, by which several parts of the machinery in course of transit were damaged, necessitating their replacement from Europe. No efforts, however, are being spared towards completion of the works, and, considering the frequent troubles which mining companies at the Witwatersrand experience in connection with the transport of materials, the probable delay in the supply of power by the electric works may be considered as insignificant.

THE Johannesburg Consolidated Investment Company (Limited) notify that the date of the general meeting of the Langlaagte Royal Gold Mining Company (Limited), to be held at Johannesburg, having been altered to October 29, the transfer books will be closed from October 13 to October 29 inclusive, instead of from September 22 to October 13.

THE GOLDEN RIDGE (WEST AUSTRALIA) PROPRIETARY COMPANY (LIMITED) notifies that certificates for shares are now ready, and will be given in exchange for allotment letter and banker's receipts.

The usual monthly dividend of 3d. per share net has been posted for the month of September by the KAFFIRS CONSOLIDATED INVESTMENT AND LAND COMPANY (LIMITED).

METAL CIRCULARS.

MESSRS. JAMES LEWIS AND SON'S mid-monthly copper report, dated Liverpool, September 16, states:—The consumptive demand for copper continues good, and most manufacturers continue busy. Less desire has been shown on the part of American producers to press the sale of their copper, but, from second hands, American refined offers at comparatively low prices—in fact, at the parity of Chili bars, allowing for the difference in the copper contents. This keeps down the value of best selected ingots, though tough cake of good quality is scarce and commands full prices. About 500 tons of yellow metal have been taken for India at 47⅝*l.* per lb., which is below the present cost of manufacture. Good merchantable copper advanced steadily from £47 1*s.* 3*d.* for cash on the 1st, to £48 3*s.* 9*d.* on the 10th inst. From this point there was a reaction to £47 12*s.* 6*d.* on the 11th, followed by an advance to £48 per yesterday, £48 1*s.* 3*d.* being paid for October delivery. To-day the closing value is £47 17*s.* 6*d.* both for cash and three months. As the cost of holding this speculative medium for three months is practically nil, it offers considerable attraction to speculators. The visible supply has decreased 39 tons, the returns issued from London being incorrect to the extent of 802 tons afloat from Chili. In the United States the position is the very reverse of what it was 12 months ago. There, after six months of exceptionally large consumption (following upon a lengthy period of trade depression) during which Lake copper had sold at 12 cents per lb, and American copper had been returned from here, the demand was beginning to fall off, and large stocks had accumulated. Now, after six months of considerably diminished consumption and contracted trade—due to the Presidential Election—practically no stocks are held, and, sooner or later, an active demand must follow, resulting in a material reduction of the quantity available for export. Lake copper is quoted at 10.75 cents.

The Chili quarters for the past fortnight are advised as 1300 tons, and exchange 17¼*d.*

Quotations to-day are:—Chili bars and good merchantable copper £47 17*s.* 6*d.* for cash, and £47 17*s.* 6*d.* for three months' prompt, sellers. English best selected ingots £50 10*s.* to £51, and tough cake £51 to £51 15*s.* per ton. Ore of 20 per cent. 9*s.* 4½*d.* Regulus and Matte 9*s.* 9*d.* per unit.

Stocks of copper (tons fine)—	Jan. 1, 1895.	Jan. 1, 1896.	May 1, 1896.	June 1, 1896.
Chilian in Liverpool and Swansea	31,917 ...	37,517 ...	28,461 ...	26,677
Chilian in Havre	40 ...	353 ...	955 ...	713
American in Liverpool and Swansea... ...	4,118 ...	916 ...	581 ...	598
American in Havre	548 ...	652 ...	1,477 ...	1,262
Sundries in Liverpool and Swansea	2,444 ...	1,362 ...	1,384 ...	937
Ditto in London	5,869 ...	1,743 ...	993 ...	939
Ditto in Havre	32 ...	381 ...	414 ...	628
English G.M.C. in Liverpool and Swansea	— ...	— ...	— ...	—
Total	40,769 ...	42,917 ...	34,246 ...	31,751

	July 1, 1896.	Aug. 1, 1896.	Sept. 1, 1896.	Sept. 16, 1896.
Chilian in Liverpool and Swansea	23,823 ...	23,476 ...	24,520 ...	24,572
Chilian in Havre	806 ...	826 ...	365 ...	472
American in Liverpool and Swansea ...	646 ...	86 ...	1,222 ...	1,390
American in Havre	1,217 ...	712 ...	381 ...	462
Sundries in Liverpool and Swansea	934 ...	911 ...	1,752 ...	1,679
Ditto in London	990 ...	940 ...	1,339 ...	1,525
Ditto in Havre	314 ...	214 ...	179 ...	204
English G.M.C. in Liverpool and Swansea	— ...	573 ...	785 ...	785
Total...	30,733 ...	30,450 ...	30,524 ...	31,069

Afloat as advised by mail and cable to date:—

	Jan. 1, 1895.	Jan. 1, 1895.	May 1, 1896.	June 1, 1896.
From Chili...	3,013 ...	1,820 ...	3,113 ...	3,144
From Australia	900 ...	1,000 ...	1,100 ...	1,900
Total visible supply	54,683 ...	45,837 ...	37,459 ...	36,795

	July 1, 1895.	Aug. 1, 1896.	Sept. 1, 1896.	Sept. 16, 1896.
From Chili	3,452 ...	2,295 ...	3,782 ...	3,198
From Australia	1,850 ...	1,560 ...	1,126 ...	1,100
Total visible supply	36,122 ...	34,215 ...	35,408 ...	35,317

Quotations:—Bars per ton £40 11*s.* 3*d.*, £41 8*s.* 3*d.*, £45 7*s.* 6*d.*, £47 2*s.* 6*d.*, £49 3*s.* 9*d.*, £49 2*s.* 6*d.*, £47 18*s.* 3*d.*, £47 17*s.* 6*d.* Ore per unit 9*s.*, 9*s.* 3*d.*, 9*s.*, 9*s.* 3*d.*, 9*s.* 7½*d.*, 9*s.* 9*d.*, 9*s.* 3*d.*, 9*s.* 4½*d.*

Imports of copper (excluding pyrites and precipitate to outports) from January 1 to date:—

	1894. Tons fine.	1895. Tons fine.	1896. Tons fine.
Chili into Liverpool and Swansea	17,469 ...	12,313 ...	11,083
American into Liverpool and Swansea ...	21,373 ...	17,491 ...	25,349
Sundries into Liverpool and South Wales.	20,619 ...	27,949 ...	25,326
Sundries into London	7,422 ...	9,656 ...	12,137
	61,981 ...	57,199 ...	73,895
Chili into Havre	2,824 ...	2,354 ...	4,345
America into Havre	4,425 ...	5,122 ...	7,500
Mexico into Havre	6,299 ...	5,950 ...	2,067
Sundries into Havre	1,625 ...	1,330 ...	1,705
	14,373 ...	12,656 ...	15,617
Tons Fine	76,362 ...	69,885 ...	87,512
Deliveries ditto .....Tons Fine.....	79,511 ...	70,930 ...	99,360

Messrs. HARRINGTON and Co's copper report, dated Liverpool, September 16, states:—Chili charters for the past fortnight are cabled as 1300 tons, making the total since December 31 last, 17,150 tons, against 16,000 tons same time last year. Exchange 17⅝*d.* Since our last issue, altogether, about 11,500 tons G.M.B.'s have changed hands. During the first part of the fortnight the market assumed a firmer tone, influenced by a consumer's demand, as well as what appeared to be covering by bears, and price advanced from £47 5*s.* to £48 3*s.* 9*d.* cash and forward. On the 10th inst., however, the advance in the Bank of England Rate from 2 to 3½ per cent., which, owing to such a long period of quietude seemed to produce a scare quite out of proportion to its importance, and this coupled with the subsequent rumours of political complications, had the effect of causing some to realise their holdings, and price of G.M.B.'s fell to £47 12*s.* 6*d.* on 14th inst., when market became again firmer, and up to £48 was paid for cash, and £48 1*s.* 3*d.* for October prompts. To-day, owing to a total increase of 545 tons in stocks, an effort was made by "Bears" to weaken the market, and after succeeding in getting price down to £47 17*s.* 6*d.*, a spirited demand set in, with the effect that at the close £47 18*s.* 9*d.* was paid for November, and at this figure we close steady for cash and three months. As one time during the fortnight there was a contango of 1*s.* 3*d.*, and now the position is practically on same level as cash and short dates. The market in the United states is reported to be steadier, and prices of Lake Copper is quoted at 10·75 cents. Very little is offering, and that only at full prices.

The following are the returns of the Copper Producers' Committee:—

	July.	August.	8 months, Jan. to Aug., 1896.	8 months, Jan. to Aug., 1895.
European Production .	7,022 ...	7,917 ...	57,124 ...	56,631 tons
American ,, ...	16,500 ...	16,595 ...	134,775 ...	108,748 ,,
Total	23,522 ...	24,442 ...	191,899 ...	165,327 ,,
American Exports	9,10 ...	10,835 ...	73,413 ...	44,843 ,,

The total stocks in Liverpool, Swansea, London, and Havre are 31,069 tons, against 31,524 tons on the 1st inst., showing an increase of 545 tons for the fortnight. The stocks include about 1650 tons of copper sold, but not yet delivered to smelters. The visible supply for the fortnight is 35,367 tons, against 35,408 tons on the 1st inst., showing an increase of 41 tons. Refined and manufactured sorts are steady. Quotations being:—Tough cake £49 17*s.* to £50 10*s.*, best select £50 to £51, Indian sheets £54 10*s.*, strong sheets £53, and yellow metal sheets 47½*d.* per lb.—Tin. Since our last the market for cash 3 ralls has been flat, and prices have fluctuated between £9 10*s.* and £9, closing dull to-day at £58 7*s.* 6*d.*, Australian £59 6*s.* 3*d.*, Straits £58 to £58 10*s.*, and Peruvian £10 to £9 7, according to quality.—Sulphate of copper. Makers' price £16 5*s.* spot, £16 10*s.* to £17 forward. Lead during the past fortnight has been strong, and closes firm at £11 3*s.* 9*d.*, to £11 5*s.* for Spanish, and £11 7*s.* 6*d.* for English.—Spelter. The market since our last has been dull, and prices show a decline of about 10*s.* per ton, closing at £16 2*s.* 6*d.* for ordinary Silesian brands.—Quicksilver. Since our last the market has been firm, closing steady to-day at £8 7*s.* 6*d.* to £8 9*s.* per bottle for Spanish.—Bar silver. Prices have declined from 30⅞*d.* down to 30*d.*, closing to-day at 30⅛*d.* per ounce standard. Antimony dull, Star regulus at £29 10*s.* per ton. Ore irregular, about £3 for 50 per cent. good quality and produce.—Bank rate of discount. The rate was advanced from 2 to 2½ per cent., on the 10th inst., it having remained at the former figure since February 22, 1894.

Messrs. HENRY BATH and Son's copper report, September 17, states:—The Chili charters for the first fortnight of this month are advised as 13.0 tons. The latest exchange is 17⅝*d.* The amount of business during the fortnight has been moderate, prices gradually improved to £48 7*s.* 6*d.*, but the change in the bank rate on the 10th instant brought about a decline, and £47 12*s.* 6*d.* was touched on the 14th instant, improving again to £48, and closing last night at £47 17*s.* 6*d.* This morning the market was quiet, closing with buyers at £47 15*s.* for any position up to three months. The New York price for Lake copper remains at 10¾ cents nominal. The shipments for the fortnight are cabled as 5972 tons. The figures for the fortnight show an increase both in stock and visible supply, but the differences are trifling considering that 12 months ago the visible supply was 17,700 tons more than it is to-day, and the price £16 17*s.* 6*d.* On the whole, we have to report a distinctly better tone about the market. The unexpected rise in the bank rate checked the improving tendency, and the smart decline in silver was not without its effect, but the market readily absorbed the speculative offerings and the decline brought in further buyers. Manufacturers report a very good trade demand both from abroad and from home consumers. India has not yet passed the enquiry stage for copper, but yellow metal sheets have been ordered rather freely, and a little improvement in the exchange would doubtless develope the business in both descriptions. In America the position is improving

slowly, there seems some disposition to discount a general expansion of trade, but nothing much can be hoped for from that quarter until political and financial affairs assume a more settled aspect. The arrivals and deliveries at Hamburg, Rotterdam, and Antwerp during the past fortnight amount to about 2150 tons. The imports of American copper into England have been 2314 tons and into France 110 tons, or 2424 tons against 461 tons last year. Total actual deliveries for the fortnight have been 4346 tons, against 5491 tons imports. The stocks have increased 545 tons. Total visible supply shows 36,269 tons, against 35,374 tons last fortnight. We have no transactions in furnace material to report,

England and France.	Imports.	D'liv'r's.	Stocks.	Afloat & Char-tered for.	Total visible supply.
Chili copper at Liverpool, Swansea, and in France	948	739	25,044	4,100	29,144
Foreign copper in London, chiefly Australian and Japanese	328	135	1,418	1,100	2,518
American copper at Liverpool, London, and Swansea	2,314	2,101	1,497	—	1,497
Other copper at Liverpool and Swansea	1,758	1,831	1,679	—	1,679
English copper at Liverpool and Swansea	—	—	785	—	785
American copper in France	110	30	462	—	462
Other copper in France	35	10	204	—	204
Tons fine copper during the fortnight	5,491	4,946	31,069	5,200	36,269
Against tons on Sept. 2, 1896	6,162	6,693	30,524	4,850	35,374
Against tons on Aug. 19, 1896	4,994	4,779	30,655	4,600	35,255

	1895.	1894.	1893.	1892.	1891.
Total visible supply September 16	53,169	52,349	48,851	60,301	59,613
		1890.	1889.	1888.	1887.
Total visible supply September 16		70,471	106,268	88,257	80,899

Price of Chili bars same date:—£46 17s. 6d., £41 15s., £42 17s. 6d., £44 5s. £52 7s. 6d., £81 10s., £43 2s. 6d., £36 10s., £39 15s.

Stocks.—We estimate the present available quantities of West Coast Copper, to be:—

	Ores, Regulus.	Bars.	Ingots.	Barilla.
At Swansea	—	658	—	—
,, Liverpool	—	23,740	174	—
In France	—	230	210	40
		24,628	384	40

Tons fine copper.

representing about 25,044 against 24,335 tons on September 2, 1896
against 41,080 ,, ,, ,, 16, 1895
,, 35,709 ,, ,, ,, 16, 1894
,, 32,779 ,, ,, ,, 16, 1893
,, 34,397 ,, ,, ,, 16, 1892

Supply of West Coast copper may be estimated from the following figures:—

	Tons.
Actual stocks at Swansea, Liverpool, and in France	25,044
Afloat and chartered for at date of last advices per mail and cablegram	4,100
Total	29,144 against 28,635 tons Sept. 2, 1896.

against same date 1895, stock 41,080 afloat, &c., 3150=44,230
1894, 35,749 ,, 2900=38,649
1893, 32,779 ,, 3550=36,329
1892, 34,397 ,, 4100=38,397

Quotations for West Coast copper are as follows:—

	To-day.	Sept. 17, 1895.	Sept. 18, 1894.	Sept. 18, 1893.	Sept. 17, 1892.
Ores ..... Regulus ...	9/ to 10/	9/4¼	7/9	8/7½	8/6
Bars	£47 15/ to £47 16/3	£46 17/6	£41 15/	£42 17/6	£44 5/
Ingots, Uremenata	Nom.	Nom.	Nom.	£47 15/	£48 5/
Precipitate...	about 9/6 to 10/3	about 9/9	about 8/4½	about 9/	9/

For other descriptions we quote to-day:—Wallaroo nominal, Burra Burra nominal. Best selected about £50 10s. to £51. English tough about £50 to £50 10s. English manufactured about £58 10s. India sheets about £55. G.M.B. copper £47 15s. to £47 16s. cash and three months. Sulphate of copper about £16 to £16 10s. cash and forward.—Tin. Quiet. Closing at £58 7s. 6d. to £58 8s. 9d. cash, £58 12s. 9d. to £59 three months.—Spelter. Irregular. £16 to £16 2s. 6d. English about £16 12s. 6d. Blende of 50 per cent. is worth about £3 14s. 6d., and calamine about £3 17s.—Lead £11 3s. 9d. to £11 5s. With silver 50 to 80 ounces about £11 7s. 6d. Lead ore of 70 per cent. is worth about £5 per ton.—Pig iron. Closing quotations for Scotch pigs are 46s. 1¼d.; Middlesbrough 38s.; hematite 47s. 1d. cash.—Antimony. Quiet. Star regulus about £29 15s. to £30. Ore £7 15s. to £8 10s. for 50 per cent. good quality and produce. Crude about £13 10s. per ton.—Quicksilver. Official price £8 10s. Seconds 1s. less.—Bar silver, 30⅜d. per ounce standard.—Discount. The Bank rate was raised on the 10th instant to 2½ per cent. from 2 per cent., at which it had remained since February 22, 1894.

REPORTS FROM THE MINES.

BRITISH MINE.

DEVON GREAT CONSOLS.—Report from Captain Wm. Clemo, dated September 17: We have now a strong supply of water from the Tamar, and all our wheels are in full work. The water is in fork below all our workings at Wheal Anna Maria and Wheal Josiah, and is down to the 70 fathom level at Watson's. The steam engine at Wheal Anna Maria is no longer required.

LEADHILLS.—W. H. Paull, September 14: Brown's vein. The water in the mine is now down 7 fathoms below the 130 fathom level. In rise above the 115 fathom level north of Jeffrey's shaft the vein contains a strong mixture of spar spotted with ore, but not enough to set a value thereon. In drift south of No. 1 stope above the 115 fathom level north of Jeffrey's shaft the vein is at present yielding 10 cwts. of ore per fathom. The stope over same level north of Jeffrey's shaft is producing 25 cwts. of lead ore per fathom. At the 85 fathom level south of Wilson's shaft the vein is 3 feet wide, composed chiefly of spar and stone, with a little water issuing from forebreast. The 50 fathom level is being pushed on northwards from main rise, but vein unproductive at present. The stope over this level (50) north is worth 50 cwts. of lead ore per fathom. At Gripp's adit going south the vein has fallen off in its produce, now yielding 10 cwts. of lead ore per fathom. I trust this is only temporary, and that it will soon improve again. The two crosscuts driving eastward at the 100 and 70 fathom levels towards Raik vein are being pushed ahead, and there is no change of note in the ground.—Raik vein. The 100 fathom level north of crosscut is going forward on vein containing a mixture of spar and stone, but rather soft for producing ore. The same level driving south of crosscut contains more spar and end is wet, looking more kindly than of late. The other points of operation are without any material change.

WEARDALE LEAD.—Report on Weardale Company's mines for the week ending September 12: Groverake. Sinking sump from 60 fathom level, we are about 1½ foot into the lime and are crosscutting south for the vein. Crosscut north from Maddison's drift, no more vein has been discovered since last report. Groverake tribute ore for the week, 13 bings. —Boltsburn. Little limestone drift east, strong plate and grey beds. Stopes in north flats above Watt's level worth 40, 40, 20, 24, and 18 cwts. per fathom. Stopes in south flats worth 12, 30, 30, 12, 16, 20, 16, 10, and 16 cwts. per fathom.—Greenlaws. Races drift vein in forehead, worth 12 cwts. per fathom. Stopes worth 16, 18, and 16 cwts. per fathom. Slatey basel drift east driving and stoping east vein poor for ore, worth 12 cwts. per fathom. Driving Lowe's drift, strong vein worth 8 cwts. per fathom. Stopes worth 10, 12, and 10 cwts. per fathom.—Sedling. Driving 64 level east strong vein, but poorer for ore, some strength has come in from the north side. The rise to the 56 level is now holed. Stope above 56 level strong vein, worth 16 cwts. per fathom. Ore raised for the week 37 tons, ore dressed for the week 41 tons. Smelt mill standing, sweeping chimney. The Boltsburn men have returned to work.

WEST KITTY.—St. Agnes, Scorrier, Cornwall, September 17: The rise in back of 84 fathom level west of Reynolds' shaft is worth £3 per fathom. The 72 fathom level driving west of Reynolds' shaft is worth £7 per fathom. The 60 fathom level driving west of Reynolds' shaft is worth £7 per fathom. The 60 fathom level driving east of Thomas's shaft is worth £3 per fathom. The 60 fathom level driving west of Thomas's shaft the lode is about 1 foot wide, yielding stones of tin, but not to value. We have commenced to rise in back of the 60 fathom level south of Thomas' shaft. The shaftmen at Thomas' have been cutting plat, also driving north at the 66 fathom level to intersect the lode. We expect this crosscut will be north of shaft 5 fathoms by the end of this week. We are driving through a beautiful channel of ground in this crosscut. Some of our stopes and tribute pitches have improved during the last few weeks.—(Signed) Joel Hooper, John Williams.

MISCELLANEOUS.

CAPE COPPER.—Capt. Henwood, July 31: Ookiep. The stope in bottom of the 130 fathom level east of winze is still producing a little saving stuff. The rock in the 68 fathom level south west of south east level contains a few spots of copper ore. There is no material change to notice in the ground in the 58 fathom level north west of 55 winze since the last report.—Stopes. The rock in the 58 fathom crosscut south of main west level is easy for driving, but is unproductive. The stopes throughout the mine continue to yield well—Trial Mines. Captain Henwood, July 31: Nababeep south. The rock in the 59 fathom level north east of north crosscut and north west from top of No. 3 winze is still disseminated with copper ore throughout, and is yielding a few rich stones of copper ore.—Spectakel. The rock in the 53 fathom crosscut north on No. 1 flookan course having become unfavourable for copper ore, it has been suspended, and the men were put to drive west about 8 fathoms back from the extreme end in the most promising part. The ground in starting yielded a few stones of copper ore, but it only continued a few feet, consequently this has also been suspended: The 53 fathom level east of No. 1 flookan course is spotted with copper ore, but not to value.—Copperberg. The 10 fathom level west of whim shaft is yielding stones of copper ore, but not sufficient to value. The stope in the 10 fathom level east of whim shaft is producing a little saving stuff. The stope in back of adit level west of No. 1 south crosscut is yielding about 2¼ tons of copper ore per fathom. The sinking of No. 3 trial shaft has been resumed, and the rock in bottom of shaft contains spots of copper ore. Nothing of value having been met in the 30 fathom level west of south crosscut, it has been suspended, and the men are put to prove some copper indications by sinking a No. 4 trial shaft, situated about 1100 feet north west of No. 2 trial shaft. The 20 fathom stope north west of No. 2 trial shaft is still yielding 2 tons of copper ore per fathom.—Ookiep east. The stope in the bottom of the 66 fathom level south and west of winze has not undergone any change to notice; it is still producing mineral for the smelting works. —Returns for July. Ookiep, 2170 tons of 18 per cent, Spectakel, 120 tons of 23 per cent.—Arrival at Swansea. The ss. *Isaada*, with 1400 tons of ore and 460 tons of regulus.—Tilt Cove. East Mine. Output for July, 5050 tons of 3·40 per cent. wet assay.—Arrivals at Swansea. The ss. *Marima*, with 2030 tons of regulus; ss. *Oakdale*, with 580 tons of ore and 915 tons of regulus; ss. *Annandale*, with 1730 tons of ore; *Alaska*, with 2510 tons of ore; and ss. *Hallamshire*, with 1540 tons of regulus.

EMERALD (Reward).—The manager under date Yalgoo, August 7, reports as follows:—Point No. 1 new main shaft. This shaft is now down 18 feet. Ground fairly solid, but sinking cannot be proceeded with much further without timber. The latter I have arranged for locally—*i.e.*, sufficient quantity to keep me going until the arrival of that ordered by Messrs. Burns, Philp and Co.—Shaft No. 5. Stoping on the series of small leaders is still being continued and fairly good gold being obtained.—Battery. Mill finished crushing at noon to day, and we are now busy cleaning up, the result of which shall be sent you next week. As a large portion of the stone and mullock treated was of a very low grade, the only fair quality being a small quantity from shaft No. 5, the return cannot help but be small.

FRONTINO AND BOLIVIA.—La Salada, July 23: Though not in a position to state the amount of gold realised, to-morrow being cleaning up day, I am pleased to be able to inform you that during the present month we seem to have advanced considerably in the right direction. An average amount of rain would have enabled us to show a decent profit; that average amount has been denied us, not a drop of water having fallen for more than 15 days, and the sky being still totally devoid of anything that might indicate the approach of a welcome shower.—Mills. Maria Dama was idle 36 hours, owing to the breaking of some of the supports of the launders that carry the water over the mill shed and to the wheel. Since then the mill has been worked with regularity. We are now engaged in changing and fortifying other supports, have renovated the timber in bins, and executed other repairs, this mill being now in first-class order, and thanks to the improvements in El Silencio, gives splendid results. La Salada new mill is also in first-class order, all the plates have been reannealed and amalgamated, and the stonebreaker will be erected in a few days. Just as we were going for things with a rush here, the water failed us, with the result that we have been able to run only two batteries of the four, and as the ore *en masse* is of rather low grade, the result for the month has been very disappointing. In fact, this lack of water has upset all our calculations, not only here, but in the Tigrito, Marmajon, and Marmajito mills, which have not been doing more than half duty. There are few changes in the mines, which will be duly treated in my monthly report. To-day I shall confine myself to calling your attention to the wonderful improvement in El Silencio. I beg to submit for your perusal the following list of assay value of samples taken from different points in the mine by my own hands, and which, I venture to say, go to show that we have a brilliant future before us:—No. 7 end north, lode about 1 foot wide 3 ounces 15 dwts. 3 grains, bottom of new shaft, in No. 7 level, lode 2½ feet wide 11 ounces 15 dwts. 4 grains, stope in back of No. 7 south of shaft, lode 4 feet wide 17 ounces 16 dwts. 1 grain, No. 7 end south, lode 2 feet wide 13 dwts. 1 grain, No. 5 end south, lode 4 feet wide 11 ounces 2 dwts. 3 grains, Rise north of shaft No. 5 level lode 1 foot wide 6 dwts. 12 grains, No. 4 end south, lode 2 feet wide, 6 ounces 0 dwts. 2 grains, No. 3 end south lode 3 feet wide 9 dwts. 19 grains, No. 1 stope back of No. 3 lode 6 feet wide 5 dwts. 12 grains, No. 2 back of No. 3 lode 2 feet wide 13 dwts. 1 grain, No. 3 back of No. 3 lode 2½ feet wide 3 dwts. 6 grains. No. 6 end is at present poor and in a disordered piece of ground, and is about 267 feet behind No. 5, which is giving 11 odd ounces to the ton. It looks reasonable that No. 6 should in due time run into the same shoot of ore, and we are forcing this point. No. 4, which is giving 6 ounce stuff, is about 93 feet ahead of No. 5. In the bottom of this we have commenced sinking, and if, as we suppose, this and the fine lode in No. 3 prove to be one and the same thing, we have the richest mine that has been seen here for years. Up to date we have confined ourselves to driving in these points, and in No. 5 have passed through 26 feet of rich lode. I am not at all satisfied with the state of affairs in the northern part of this mine, where the lode seems to have been lost, split-up, or killed. Time has not yet allowed me to study this sufficiently to form an opinion on it, but I think that investigations ought to be carried on in this part of the property. Rain is what we want, and with a moderate amount of it we can in the future relieve you of all the anxiety you may suffer, and that may have been caused by the falling off in the returns.—La Salada, August 10. I am sorry to have to state that, with the exception of one heavy shower, we have had no rain since sending you my last. This continued drought has sadly interfered with our produce, which would be far ahead of what it is, had we been favoured with only a moderate amount of rain. You will see by the figures that even with this exceptionally dry weather we have been able to increase our production, and to show a small profit. For this we are wholly indebted to the improvement in El Silencio Mine, and to the regular way in which the mill was run during the latter part of the month. Silencio mill is now in a thorough state of repair, with the exception of the axle of the main water wheel, and some launders through which the water flows to it. The repairing and changing of these will entail a stop of some 14 hours. This will be done as soon as we have a rainfall that will enable the other mills to compensate for the loss caused by this stoppage. We have also to reconstruct a tunnel that passes under one corner of the mill, which is in a very dilapidated state, and through which the accumulated water of the El Silencio valley flows. We have now a catchpit for our slimes, those leaving the Frue Vanners giving 17 dwts. to the ton, and from the washing tables, where the savings of Frue Vanners and from buddles are re-concentrated, a larger return.—El Salto. Here we have some arrastres worked by a small Pelton wheel. They have only moved for a few hours during the whole month. With a moderate amount of rain this little establishment would give very good results. La Salada new mill owes the falling off in its production to low grade ores, lack of sufficient water power, and driving rope troubles, the whole producing a most unsatisfactory and disappointing state of affairs. The abundance of low grade ores in La Salada requires a large quantity to be run through the mill, which could easily be done had we the power at hand. Until we have we are stoping some of the best parts of the lode, hoping by so doing to compensate to a certain extent for the lack of water. Cordoba and the other mills in that district are working as usual. Some of them are sadly in want of repairs, which will be executed as soon as a full supply of water will enable us to increase our milling power and to compensate for the loss in production that may arise from the stopping of one of the mills the time necessary for putting it in good order. —The mines. El Silencio. Since my last no important change has taken place here. The mine generally is looking well, and the work in the various points is progressing favourably. No. 6 end still continues poor and in disordered ground. We are now sinking from No. 4 to No. 5, and from No. 5 to No. 6, which, as mentioned in my last, is some 267 feet behind it. Both these winzes are going down in a well-formed lode about 3 feet wide, and yielding good ores (about 3 ounces to the ton). In the northern part of the mine we have commenced driving the No. 5 level, and shall continue to do so until the appearance of the strata indicates a more settled formation, when we hope that the lode (which for many fathoms has been scarcely worthy of the name) will re-form itself, and again prove productive.—La Salada. The lode in No. 2 level north is not quite as large as when last reported on, the quality of the mineral having at the same time improved. It is now 15 inches wide, giving an assay value of 1 ounce 9 dwts. 12 grains to the ton. The stope in back of this level and north of No. 2 rise has fallen off in quantity, being much mixed with country rock; it is 1 foot wide, and worth, according to assay, 1 ounce 2 dwts. to the ton. The lode in the No. 2 level north and on the flat lode is 5 feet wide and of an assay value of 1 ounce 2 dwts. 20 grains to the ton. The lode in the rise above the back of this level is smaller than it was last month, being now 20 inches wide, with an assay value of 1 ounce 2 dwts. 20 grains to the ton. The lode in No. 2 level south is 1 foot wide, its assay value being 2 ounces 7 dwts. No. 2 rise in the back of this has been holed to No. 1 level; this is supposed to have opened up a large section of good stoping ground, and has caused this part of the mine to leave nothing to be desired in the shape of ventilation. The lode in No. 1 stope, back of No. 2 level south and south of No. 1 rise, is 3 feet wide, and worth 6 dwts. 12 grains to the ton. In No. 2 stope, north of No. 2 rise, the lode is 20 inches wide, assaying 13 dwts. No. 3 stope south of No. 2 rise contains a lode 3 feet wide, yielding 2 ounces 15 dwts. 18 grains) to the ton. The lode in No. 1 level south is small and poor, being 8 inches wide and worth 8 dwts. to the ton. The Day level (upper adit) has been communicated to No. 1 rise, which was brought up from lower adit on flat lode. This has ventilated the mine throughout. At the point of communication the lode is 5 feet wide, and worth 6 dwts, 12 grains to the ton. You will be pleased that the bin and derrick are now completed, several improvements have also been made in the shape of levelling and walling, with the result that the place presents quite a compact and business-like appearance. We shall soon have a double skip road to the bottom of the shaft, and hope shortly, with the necessary amount of water power, to resume sinking operations.—Cordoba. No. 8 adit. In the two points started north and south on the Cordoba lode, of which mention was made in a former report, there is no change worthy of mention, the north or right hand end, which for the moment is of the most importance to us, continues in hard ground and contains a small and poor lode. In the level previously driven north from a point further in the adit I have to report a decided improvement, and one that leads me to think that we have here made an important discovery. Here we have undoubtedly intersected one of the Cordoba lodes, and hope soon to again do so in another point—*i.e.*, a crosscut, from which abundant water is flowing. The lode intersected is fully 1 foot wide, and according to assay contains 3 ounces 15 dwts. per ton. I hope to send you per next mail a plan of this part of the workings, which will enable you to grasp the situation much more readily than you can by any explanation I can give in writing. The level driving from No. 7 is without change. —Tigrito. In No. 6 level east we are liberating a large quantity of water, the ground at the same time presenting a more favourable and kindly appearance. On the face of these favourable indications, we expect an early improvement here. The lode is at present about 8 inches wide. In the No. 6 level west the lode is looking better, and apparently contains mineral of a higher grade. There is no change in the stopes worthy of mention. Rosario tunnel has been driven through the hill, and we hope to see the water flowing through it in about three weeks from this date. When this takes place we shall have an increase of power for our Tigrito, Marmajon, and Marmajito Mills. Since last reported the end has entered a piece of very disordered ground, that has thrown the lode from its usual course. Until we have again found it there will be nothing of interest to report on from this point.—Marmajito. Lode in No. 2 level east has improved, it being now about 12 inches wide, and of apparently good grade. In No. 2 level west the lode is about 15 inches wide, good milling ore. No. 1 west has improved, lode of average quality stuff, and 14 inches wide. A rise in the back of this level contains two branches 24 and 15 inches wide respectively, both of moderate quality.—Cost and returns. When you take into consideration the number of hands employed, and the materials used in the building and completing the surface work at La Salada, the assay and smelting establishment, and many other jobs of minor importance, I do not think you will complain of the cost. The profits on the month's working would have been much more had we not been so distressed for the want of water.—John Penberthy.

NORTH BOULDER.—Extracts from letters from the mine manager:—The crosscut west at the bottom of winze in western boundary shaft has now reached the hanging wall, and shows the Duncan lode to be 10 feet on west shaft, and I am now crosscutting east for the footwall. We have, therefore, already 10 feet (the length of the crosscut) and 4 feet (the width of shaft) equal to 14 feet, as the size of the lode, and I have not yet the footwall on the east. The assay of samples taken here and there along the crosscut to-day gives 8 ounces 8 dwts. per ton, . . . The crosscut west at the middle shaft has also reached the hanging wall and shows the Duncan lode here about 25 feet wide, the assay value being 1 ounce 18 dwts. per ton, . . . The mine is being vigorously opened up . . . and I have already a very large body of ore from the Duncan lode at bank and can break out 100 tons per month if necessary. There are also some 3000 tons of ore at the prospector's shaft which should yield a good profit.

NUEVA ESPERANZA.—The secretary reports that he has received the following intelligence from the superintendent at the mines: Everything is going on well at the mine, but we are very short of water. The systems and ditches are in good order and giving no trouble.

LADY LOCH.—The mine manager's report is as follows:—As requested by you to give a general report on the Lady Loch Gold Mine, I have much pleasure in handing you same.—Work done. Main shaft, 183 feet; main shaft N. crosscut, 66 feet; main shaft E. drive, 100 feet.—Prospecting shafts: No. 1, 100 feet; No. 2, 127 feet; No. 1 E. drive, 225 feet; No. 1 W. drive, 126 feet; No. 1 E. drive, No. 1 winze sunk below the 100 feet level, 57 feet; No. 1 E. drive stopes above the 100 feet to a height of 38 feet; No. 2, 100 feet; No. 3, 83 feet; No. 3 N. drive, 40 feet.—Main shaft. This shaft is sunk on the hanging wall of the reef to a depth of 183 feet. The size of the shaft is 11 feet by 4 feet in the clear of timber with two centres. In the sinking of this shaft we struck a small leader about 1 foot wide, which continued in the shaft to a depth of 157 feet, thus underlaying to the north. This shaft was sunk to a further depth of 183 feet, passing through a very hard bar of diorite, but in my opinion this bar will soon be passed through, and better country will soon be met with.—Main shaft north crosscut. This crosscut was put in at the 157 feet level for the purpose of connecting and tapping the Lady Loch main reef. I may say that this crosscut was a very hard one. We cut the reef in the crosscut at 60 feet, proving the reef to be slightly broken up, and exposing 6 feet of lode stuff, carrying a little gold.—Main shaft, east drive. This drive was started from the end of the main shaft north crosscut and extended on the course of the reef a distance of 100 feet east, carrying the reef all the way and in general good prospects, reef averaging 3 feet.—Prospecting shaft No. 1. This shaft was the first shaft sunk on the course of the reef, and was sunk on to a depth of 109 feet, when the reef underlayed out of the shaft and dipping south, then we continued the shaft to a further depth of 149 feet, and then I put a crosscut south and cut the reef in about 6 feet from shaft carrying fair gold. —Prospecting shaft No. 1, 100 feet level. At the 100 feet level we opened out by driving east and also west on the course of the reef. Drive east was put in a distance of 225 feet on the reef, proving the reef to be fully 3 feet wide and carrying good gold. 100 feet in this drive we put down a winze on the course of the reef a distance of 57 feet, exposing the reef all the way and carrying splendid stone averaging 2 feet 6 inches wide. Just above the winze we put up a rise on the course of the reef to a height of 38 feet, and have stoped out about 30 feet east of No. 1 rise, and about 30 feet west of No. 1 rise, all of which was very payable stone. Below the 100 feet level we have stoped out about 50 feet by 30 feet each side of the No. 1 winze, all of which has turned out splendid stone.—No. 2 prospecting shaft is 135 feet east of No. 1 prospecting shaft. This shaft is sunk on the course of the reef for the purpose of connecting with the east drive at the 100 feet level for the purpose of giving ventilation to the mine and also making a good block of ground ready to work out. All the stone in this shaft carries fair prospects of gold. —No. 3 prospecting shaft. This shaft is sunk on a small reef coming to the Forrest King boundary. The reef is about 1 foot wide and looks very promising, but at present shaft has not been worked so as to enable me to put all my labour in the body of the mine.—Machinery. We have our winding machinery running and in good working order, the saw bench is saving fully 30s. per 100 super feet.—Battery. I still maintain that the battery is in the wrong place, and I hope shortly to see it on the loch proper. Since I took charge I have sunk, driven, and risen 1700 feet. Total amount crushed is 807 tons, yielding 2696 ounces of gold, which I consider is very satisfactory.

MENZIES MINING AND EXPLORATION CORPORATION.—Extracts from mine manager's report week ending June 16:—Sinking and driving at Menzies, total for the week 145 feet.—Lease No 1450, Lady Shenton East. Contractor sinking main shaft. Engineer has fixed winding engine in position; all ready for work.—Lease No. 1451, Lady Shenton Extended. Main shaft (152 feet deep) cut down and timbered 10 feet, total 45 feet from surface. Pushing along brace with all possible speed. Ground cleared around the mill site, and blacksmith's and fitter's shop in course of erection, carpenter's shop in course of erection, setting up mill boiler, fixing tanks, arranging to get water in for crushing plant from water company's terminus, about 1000 yards distant, laying in stocks of firewood.—Lease No. 3269, Zenobia. In the western crosscut at the 60 feet level cut reef 3 feet thick, assaying 12 dwts. to the ton.—Lease No. 1430, Leonidas. Depth of shaft 143 feet following reef, formation 2 feet wide, stone 10 inches, shows heavy and fine gold when panned.—Lease No. 3102, Pandora. Shaft No. 5, depth 98 feet, thickness of the vein 14 inches, carrying payable gold. Shaft No. 4, width of vein 2 feet 4 inches, assaying 13 dwts. to the ton.—Lease No. 3103, Ishtar. At 100 feet level in crosscut connecting shafts Nos. 3 and 4 vein 8 inches, containing payable gold.—Lease No. 3102, Isabel. In new underlay shaft at depth of 71 feet vein 9 inches thick, assaying 26 ounces 0 dwt. 12 grains per ton. Shows fine and coarse gold when panned. In old underlay shaft at the depth of 146 feet vein 15 inches wide, becoming heavily charged with pyrites. In No. 3 shaft depth 58 feet, width of vein 9 inches, containing by assay 3 ounces 6 dwts. 10 grains of gold per ton.

FORREST KING OF COOLGARDIE.—The mine manager's report is as follows:—As requested by you to give a detailed report on the Forrest King Gold Mine, I have much pleasure in submitting same to you:—Work done consists of. Main shaft 243 feet, No. 1 north shaft 131 feet, No. 2 north shaft 100 feet, No. 1 north underlay shaft 56 feet, middle underlay 135 feet, No. 1 south shaft 56 feet, No. 2 south shaft 80 feet. Main shaft sunk 243 feet, No. 1 cutting the reef at the 180 feet level, proving it to carry good gold and also being fully 3 feet wide, samples of which gave fully 2½ to 3 ounces prospects. At the 225 feet level we have put in a crosscut east, for the purpose of cutting the reef, but we find that the reef has gone very flat and is riding on the country, but it is my opinion that we will get the reef during the next few feet, although at present we are swamped out with water, and have had to stop our work until we get our pump, &c.—No. 1 north shaft. This shaft is sunk on the course of the reef to a depth of 131 feet, and then a drive has been started south on the course of the reef for the purpose of connecting with the middle underlay shaft, at present we are getting some splendid gold from this level.—No. 1 north underlay. This is one of the old vendor shafts which is connected with the No. 1 north shaft for the purpose of giving ventilation to the mine. —Middle underlay shaft. Is sunk on the course of the reef to a depth of 135 feet, carrying the reef all the way, and showing very fair gold in places.—No. 1 south shaft. Was sunk on the hanging wall side of the reef for the purpose of cutting the reef at depth, but at present has not yet got anything.—No. 2 south shaft. Is the most southerly shaft on the lease, and is sunk on the course of the reef to a depth of about 80 feet, is proving fully 3 feet of stone, all of which carries fair gold.—Machinery. We have now the machinery on the ground and in position, but we are now waiting for the base plate of boiler stack. I hope to see the poppet heads up in about five weeks time, and also the machinery at work. The secretary states that Mr. McCracken is expected in England about the end of this week, and as soon as possible after his arrival a further report will be sent to the shareholders, or an opportunity given to them to meet him.

AUSTRALIAN AND NEW ZEALAND.

ARROW BROWNHILL.—Report on the Waitekauri Group: Since writing you my last report, work has been started on the Waitekauri and Missin Link mines, and the developments have fully borne out my opinion of the property. At present we are now at work getting timbers and squaring up both the Missing Link 75 feet shaft and the Waitekauri 50 feet shaft, to be 4 by 8 in the clear, which, as soon as timbered to their present depths, will be continued down, and used as working and water shafts. In first starting work I did some development, which consisted, on the Missing Link, of driving both ways from the bottom of the 75 feet shaft to prove how the vein was holding out both in width and value. Also, in opening out along the course of the vein on the surface. The developments along the drives and on the surface were fully up to expectations, so I stopped work on them, and am now getting shaft in shape for putting up whip and getting down to water which we will have at about 90 feet. On the Waitekauri, the 18 feet shaft on No. 2 vein was sunk to 35 feet, the vein showing very well, and, in fact, I think will average over 2 ounces to the ton. In going over the ground I feel convinced of there being still another vein between No. 1 and No. 2. I put men to work on the surface, and have shown up by open cut what appears to be another reef about 5 feet wide, averaging about 1½ ounces, or if not, No. 1 vein must be nearly 20 feet in width, with a horse of country rock between. The crosscut from the 50 feet shaft should have been continued, and then would have cut through the reef. However, I shall continue it just as soon as the shaft is squared up and timbered. I do not depend on assays, but I send you three I have just taken as a check on my estimates. You will see by them that they are within a few dwts. of what I told you a month ago, though No. 2 is much over my estimate.—Charles Taylor, Coolgardie, July 31.—Assay certificate, Central Assay Office, Sylvester Street, Coolgardie, W.A., July 31: To the Arrow Brownhill Gold Mining Company:—I hereby certify that the materials herein described and assayed for gold after drying at 100° C., gave the following results:—No. 1, Quartz, &c., 2 ounces 13 dwts. per ton of 2240 lbs.; No. 2 ditto, 2 ounces 11 dwts. 12 grains per ton of 2240 lbs.; No. 3 ditto 2 ounces 10 dwts. 12 grains per ton of 2240 lbs.—Alfred Sowter, assayer. No. 1 is from Waitekauri 35 feet shaft on No. 2 vein. No. 2 is from Waitekauri 5 feet level on No. 1 vein. No. 3 is from Missing Link 75 feet level.—Charles Taylor.

ASSOCIATED.—Mine manager's report for fortnight ending July 29: Adelaide Block 103e, No. 1 shaft, 125 feet level. Crosscut west extended to total 33 feet. No change to report in nature of ground. We have erected whip at this shaft and also improved ladder way. No. 4 shaft sinking below the 135 feet level sunk to total 42 feet below pit 8, and to total 177 feet from surface. The water is slightly on the increase.—Australia Block 35e, No. 8 shaft. Drive south extended to total 50 feet. No change to report in nature of ground. 90 feet of ladder road put in. No. 9 shaft has been sunk 7 feet.—Australia East Block 72e, No. 6 shaft. Made and put in 114 feet of ladders. Divided ladder road from hauling shaft, and also completed plat, which is 7 by 8 and 9 feet high. No. 2 has been driven to total 6 feet from shaft, and judging from prospects would average 1½ ounces to ton. No. 7 shaft sunk to total 38 feet from bruce, also driven east to total 14 feet from shaft. No 8 shaft started and sunk 14 feet.—(Signed) William Oats.

EAGLEHAWK CONSOLIDATED.—The following fortnightly report has been received from the mine, dated Maldon, August 3: The shaft has been sunk a further depth of 40 feet, total from the plat 97 feet, or 1297 feet from the surface. We have 29 feet more to complete the 300 feet; this, with ordinary circumstances, will be finished by the next fortnight. The ground that is coming in from the west within the last day or two has every indication of being near the roof channel, it is more of a slate formation. That in my opinion is a very good indication. If we do not get the reef in the shaft within the next fortnight it is very probable we will strike it in cutting the plat.

DEVOIS WESTRALIAN SYNDICATE (Maori South, Menzies).—Reports just received from the mine manager state as follows:—Average width of lode about 3½ feet at depth of 90 feet. Lode looking distinctly good and increasing in size and richness. Stone from present shaft assaying from 2 ounces 15 dwts to 3 ounces 10 dwts. Expect very shortly to cut the lode with main shaft at a depth of 95 feet, situate in centre of lease, the shaft being already down 80 feet.

BRITISH BROKEN HILL PROPRIETARY.—Mining manager's report for week ending August 5:—Blackwood shaft, 190 feet level. The northern and western faces in southern section stopes yielded good supplies of carbonate ore for milling requirements, and splendid breasts of ore are exposed. A fair quantity of good grade lead ore was obtained from the stopes above and below this level in the eastern vein. 355 tons were broken during the week. The tributors obtained from the stope just above this level 43 tons, and below 54½ tons.—Howell shaft, far north stopes. The southern faces of this stope produced a large quantity of carbonate ore for the mill during the week. The faces are looking very well. We mined 643 tons carbonate ore, total quantity of carbonate ore broken during the week 1107 tons.—Surface. The erection of the slime buddles is being hurried on, and the extension of the concentrates shipping floors is nearing completion.—Week's assay: Carbonate ore, lead from 12½ per cent. to 65·5 per cent., silver from 1·3 to 20·4 ounces per ton.—Cable advices, September 12. Result of concentrating work for nine days, 1300 tons crude ore treated produced 710 tons concentrates, containing 440 tons lead and 1300 ounces silver.

BIG BLOW.—The following report, dated August 12, has been received from the mines manager, Mr. W. M. Vivian. There is nothing new to report. Water is accumulating slowly in the water shafts, and later on as the summer advances will prove a valuable asset.

CONSOLIDATED GOLD MINES OF WESTERN AUSTRALIA.—The directors have received the following manager's report upon their Yellow Aster and Golden King Mines at Toweranna, north-west Australia, dated July 4:—Yellow Aster. Owing to want of mining timber have had to discontinue sinking the main underlay shaft, but have started a drive on the lode to the northward from the underlay shaft at 50 feet from the surface. This drive is in fine, cutting through a fine body of stone, in places nearly 3 feet wide, and prospecting very well. I purpose in the next fortnight sinking another small shaft to the north to cut this drive and to prepare for stoping out crushing ore.—Golden King. Work was resumed on this lease on June 22. The work of repairing the deep shaft for battery well purposes has been commenced. No. 4 shaft is also being sunk to cut the lode in No. 5. Now down 11 feet. New brace has been put up on this shaft, the old timber being very unsafe.—Golden King Extended. Pending notice of exemption for concentration of labour on Golden King being received, the labour has been employed mostly trenching to cut caps of reefs and repairing the brace.—Golden King south, No. 6 shaft. Have driven from the crosscut on 60 feet level along the lode to eastward 11 feet. The lode showing stronger in the face. Porphyry formation similar to the Yellow Aster has come in on the hanging wall which would seem to indicate that the lode will go down strong. The vein of crushing quartz is over 2 feet, the stone prospecting well. Gold occasionally visible in the fracture. It can now be said that the lodes are so far developed on the property that raising ore for the battery can be proceeded with. As soon as you can send some rails I purpose proceeding with the laying of a tramway from the underlay shaft and Nos. 1 and 2 shafts to the battery site. The timber received by team for the battery shaft will be sufficient to timber in 17 feet, and this may answer for some time, until the shaft is wanted for using caps in.

CONTINENTAL AND WESTERN AUSTRALIAN TRUST.—The mine manager reports on August 4 as follows: Maori King lease. Driving level north and south both faces same as last, crosscuts still carry good gold. Estimated value of ore, north 2 ounces, south 1 ounce 10 dwts. Cannot tell the width of lode at present as crosscutting interferes with putting levels ahead. Have taken a scraping the whole length of level, 253 feet, about 20 buckets, broke and thoroughly mixed the same with a result in gold of 1 ounce 10 dwts. At present I think you might say it will be the same, at least 11 feet wide. This test is no picking: 22 lbs. of stone was dollied from the 20 buckets this morning. Big body of stone coming in north.—Maitland lease. The mine manager reports on August 5. In eastern shaft we are still driving to cut the reef, and should have done so, if it had not altered in its underlay.—Western shaft. We are now down 9 feet since the reef has made its appearance, and it has developed into a lode about 3 to 4 feet wide, with from 15 to 18 inches of quartz in the centre. As we were delayed by the taking down of about 20 feet from the south side of the shaft, we are not far enough in the lode to know definitely the value of the lode.

CRAVEN'S CALEDONIA.—The following fortnightly report has been received from the mine, dated Charters Towers, July 30:—In the underhand stope from No. 8 level the reef averages about 8 inches in thickness. The No. 7 level on the hanging wall reef has been extended a further distance of 9 feet, making a total of 114 feet from starting point, and in this level the reef has reached a little. In the eight stopes over this level the reef averages about 9 inches in thickness. The haulage of quartz for the company for this fortnight is about 61 tons, making a total of 183 tons towards the present crushing which is now going through at the Syndicate mill. Hooper and party in No. 6 level are running through a crushing of about 30 tons at the Bonnie Dundee mill. Gladdish and party have extended No. 6 level a further distance of 2 feet, making a total of 35 feet from starting point, and this party have got about 70 tons of stone broken. Francis and party have just made a fresh start over No. 6 level. Gribbon and party in the Victoria reef are doing fairly well.

COLUMBIA (Charters Tower).—The mine managers report as follows, for the fortnight ending July 29: The contractors have sunk a further depth of 21 feet, making the total depth of the shaft 288 feet. The rock is now hard, and progress is not so good in consequence. The engine shed is finished with the exception of the flooring, and the poppet legs are now in course of construction.

DIXIE GOLD.—The secretary writes: The assay certificate referred to in the Chairman's last letter has now arrived. The following are the figures:—Guinea, 31 ounces 13 dwts. 18 grains gold, and 233 ounces 11 dwts. 15 grains silver per ton. Crushed quarts 9 ounces 7 dwts. 7 grains gold per ton. Check assay 31 ounces 11 dwts. 14 grains gold, and 233 ounces 19 dwts. 17 grains silver per ton.

FREDERICK THE GREAT.—Extract from fortnightly report, dated Bendigo, August 10:—We have the honour to report to you the following progress in your mine during the past fortnight:—The level south at No. 5, or 680 feet from the surface, has been driven a further distance of 27 feet and timbered, total south of main crosscut 629 feet. There are nice black seams of slate making in the reef in the face of this level, and little gold. The men were taken out of this level and put on to break stone on west side of the intermediate level on the 3rd inst. The intermediate level north, 58 feet below the 580 feet level, has been driven a further distance of 22 feet, total north of main 30 feet. We are breaking the stone here 14 feet wide, and it is showing a little gold the whole of this width. We washed up a crushing from here on Saturday last of 150 tons, for a yield of 121 ounces 15 dwts. gold, which is a better yield than was expected, and is most satisfactory. We wired you this gold return to-day.

GREAT BUNIYONG ESTATE.—Making good progress with the plunger chamber at the alluvial shaft, sunk 16 feet; full depth 246 feet. Country at present slate and sandstone. At the quartz shaft water lodgment is in 11 feet in a hard bar of blasting country. Hope to complete this work about the expiration of the week.

GRIERSON'S (Coolgardie).—The manager under date of August 3 reports as follows: Have extended crosscut a further distance of 4 feet 6 inches. Country passed through dirty, containing streaks and splashes of quartz. Also cut a small leader of 4 inches underlying to the west. Total length of drive 45 feet 9 inches.

GIBRALTAR CONSOLIDATED.—Mine manager's report for the month ending July 31:—Radcliff shaft. Present depth 355 feet. Will resume sinking next week on completion of air pipes down the shaft to work rock boring machines. Lode in shaft 18 inches wide, fairly mineralised stone. Prospects about 3 ounces to the ton. The 40 feet level north has been driven 22 feet, total length 156 feet. A bar was intersected which cut the reef off. We crosscut on this bar to the east, where we again found the reef 15 inches wide of high grade ore. The winze in the 40 feet level south has been sunk 30 feet, total depth 77 feet. Lode 15 inches wide of good grade ore, 3 ounce stone. The driving of the 160 feet level north has just been resumed with rock drills; these act well. The lode is 3 inches wide of medium grade ore. In the intermediate drive the reef is 1 foot thick of medium quality stone. This drive is in 18 feet from stope, where the lode is 15 inches wide of fair quality stone. It has intersected a bar in the face, but the stone shows on the north side of bar also. 160 feet level south is at a standstill pending the erection of the large air compressor. The winze in the 160 feet level south has been sunk 22 feet, total 76 feet. The west crosscut has been driven 45 feet, total length 220 feet, no change in face. Have not as yet intersected the Calico reef. The reef intersected by this crosscut is 5 inches wide of solid mineralised stone. Prospects about 15 dwts. to the ton. The 230 feet level north has been driven 23 feet, total length 198 feet. The reef is 4 inches wide. The 230 feet level south has been extended 14 feet, total length 248 feet. This level is at a standstill awaiting the starting of rock drills. Leading stope gone 30 feet, reef 18 inches wide of high grade ore. No sinking has been done in the winze below this level as we have been cutting a plat and preparing for hauling with air winch. The lode in the winze is 2½ feet thick of high grade ore. The 355 level north has been extended 22 feet, total length 70 feet; bar in face. We are shooting the reef down, and are now within 20 feet of the face. Up to this point the reef ave aged 9 inches thick of fair quality stone. The 355 level south extended 11 feet, total length 53 feet. The west crosscut has been driven 19 feet, total length 27 feet.—Shepard's shaft. Depth of shaft 225 feet. The crosscut to the east at a depth of 200 feet has been extended 19 feet 6 inches, total depth 31 feet. Suspended for the present. The crosscut to the west at this depth has been extended to 23 feet 6 inches, total length 34 feet. We expect to strike Shepard's reef in this crosscut in 14 feet more driving.—Machinery (supplementary report). Air compressor at Radcliff shaft is completed and underground pipes are being installed. Several rock drills are now at work. Have completed concrete in trench for the mortar piles at battery, and am now placing piles in position. Foundation walls for bottom longitudinals are finished. Foundation for duplex air compressor is finished, and compressor is in position. Am now laying water pipes to turbine wheel and getting receiver in position, when we will commence laying air pipe line.

HAMPTON PLAINS EXPLORATION.—Mine manager's report on Block 59: August 7. The shaft described in the last report has been discontinued on account of the reef, which was cut at 76 feet in the west crosscut being ill-defined, and the stone only averaging about 5 dwts. per ton. As the reef in the main shaft yielded fair assays, the men have been put on to open it up to the north at the 35 feet level, the distance accomplished during the week being 16 feet. The reef is of an erratic nature, not holding any defined course. At about 10 feet in the drive it was 18 inches thick, showing gold. In the face of the drive the reef appears to be again making into a fair body of stone. The country consists of decomposed intrusive rock.

HANNAN'S STAR.—The directors have received mail advices from the mines superintendent to August 3, as follows:—Donoughmore's shaft. The west crosscut has been extended to a total distance of 32 feet from shaft. The ground is harder than previously reported, but it is in big floors with veins of fluoan. The water is making very freely from the face of the crosscut. It is now about 2000 gallons per 24 hours, which, in my opinion, is a good indication of the lode formation being ahead of us. From this and the other shafts, viz., the Western and Lapage's shafts, I believe we have got over the great water difficulty, and that there will be quite sufficient to keep 10 or 15 head of stamps when required fully employed, as previously stated. I may state that since passing through the hard diorite country, and coming into the channel of ground that we have, I am most favourably impressed with your property and the prospects of the same. We have made and erected the poppet legs over this shaft, and as soon as we can obtain timber from the sawmill we shall be fixing stays, laying down the joists and flooring for the landing brace, which I shall endeavour to have completed before the arrival of the steam winch.—James's shaft. The contractors have extended the western crosscut to a total distance of 224 feet from the shaft. Ground still hard blue diorite, and very bad for working. From what I can learn the lode has taken a heave to the west in coming towards your northern boundary, therefore possibly we may yet have to drive further before we cut the lode formation.—Lapage's shaft. The crosscut has been extended to a total distance of 21 feet 6 inches from shaft. Ground decomposed diorite and schist with ironstone veins running through it full of slippery heads, and we are obliged to put in sets of timber to keep it secure. We can obtain a little gold by dish washing.—West shaft. The eastern crosscut has been extended to a total distance of 93 feet from the shaft. Ground composed of quartzite, schist, and ironstone veins, making it difficult to work.

LAKE VIEW EXTENDED.—Mine manager's report for fortnight ending July 29: Block 101E, No. 3 shaft, 104 feet level. Crosscut west extended to total 119 feet. No change to report. The drive north on lode material has been extended to total 27 feet.—No. 4 shaft, 170 feet level. Driving north and south on lode each drive. South drive extended to total 81 feet. North drive extended to total 19 feet 6 inches.—No 5 shaft, 62 feet level. Drive on crosscourse extended to total 156 feet.—(Signed) Wm. Oats.

LAKE VIEW SOUTH.—Mine manager's report for fortnight ending July 29:—Main shaft, 200 feet level. Have opened out eastern plat, which is now 7 feet by 10 feet 9 inches, also driven 8 feet from western plat towards lode, and will continue this drive until lode is reached. Have started sinking a winze from the 100 feet level to communicate with lower level for air. Battery is close on completion. Pipes for water main are on the ground, and being laid as fast as possible. Condenser is working well. We are busy completing another to save battery exhaust steam.—(Signed) Wm. Oats.

LADY MAUDE.—The manager under date of August 12 reports as follows: In the face of the Surprise main shaft crosscut there is a decided change, the face being a mass of small quartz veins, some of which carry a fair percentage of gold. It is quite possible the reef will soon be in hand.—Water shaft. More quartz is coming in at bottom of shaft carrying gold, and trending towards the main body. The nature of walls will not allow of my opening out just yet, but will do so as soon as I get quite clear of the lode matter. There is no doubt we shall have a tremendous ore formation here, as I have been passing through quartz veins and ore matter for the last 50 feet, the whole of which carries more or less gold.

LONDON AND WESTERN AUSTRALIAN EXPLORATION.—Reports received from the mine managers by this mail are as follows:—Prospecting party on Block 43 Hampton Plains. Driving operations are now going on from both shafts. The stone in No. 1 shaft is 3 feet wide, well mineralised and showing gold freely. The lode is well defined and solid, and underlies about one in four to the east. The lode in No. 2 shaft has been somewhat disturbed for the last few feet sunk, but it was coming stronger again in the bottom. The stone seems of the average quality and dollies well.—Lady Franklin lease (Pendinni). Reef 3 feet wide, showing a little fine gold; can get a fair prospect by dollying. Have been cross-cutting west of west shaft on the reef, stone showing fair gold; the best prospect on the reef at present.—British King (Darlot). A shaft has been started on hanging wall side of reef to cut the latter at about 80 feet. The intention is to go through reef and sink a well about 20 feet, and later on to put a whip on this shaft.—Mertzyn (Mount Sir Samuel). The company's agent at Cue writes:—Mr. Lempriere (of Calder and Co.) came in from Mount Sir Samuel to-day and brought a sample of the stone raised from Hansen's shaft, which is down 23 feet. It was taken from the dump, and shows gold freely. Mr. Lempriere says you can see gold in all of the stone being raised, and the reef in the bottom of the shaft is a good 2 feet and appears to be widening. This confirmatory report is extremely pleasing to have.

LONDON AND WESTERN AUSTRALIAN INVESTMENT.—Messrs. Alex. Matheson and Co., the company's agents in Western Australia, report by this week's mail as follows:—Water rights at Hannan's Contracts have been let for the sinking of wells upon the company's water rights, Nos. 89, 89, 91, 91, and 92, at Kalgoorlie. It is contemplated sinking these wells to a depth of about 175 feet, and the size of the shafts will be 6 feet by 4 feet in the clear.—Villas at Claremont. Several applications have been received for the renting of these villas, which are now approaching completion.—Murchison Hotel, Cue. Mr Daly, the company's tenant, has now opened this hotel. The booking office for Gascard's line of coaches has been located in the building, and connected with the hotel is a building 20 by 25 feet, which has been leased to the Stock Exchange. The hotel has been furnished in a very superior manner, including two billiard tables, and it already enjoys a very large patronage.

MENZIES GOLD ESTATES.—Extracts from mine manager's report, dated August 5: Aurelia, No 2 shaft. The lode in this shaft is now 2 feet wide, and the country is getting firmer and more settled at this point, which is 97 feet from surface. In the breast of 87 feet level north the lode formation still continues the full width of level, but the quartz streak has been varying from 3 inches to 1 foot. A sample of the stone taken out assayed 3 ounces 4 dwts 16 grains per ton.—Mill. The battery blocks are in position and rammed, and part of the framework fixed. The oil engines are unpacked, and I find them in good condition.

MENZIES "CRUSOE" GOLD CLAIMS.—The following information is to hand from the manager at the mines, under date Menzies, August 8: Robinson Crusoe lease, A Shaft. Have been stoping from 50 feet south level with four men, reef average 18 inches, value 25 dwts. Stone raised 20 tons.—B Shaft. Have continued stoping from 5 feet north level with four men reef average 2 feet, value 4 ounces per ton. Raised 25 tons.—C shaft. Have driven south from crosscut over the back of winze with two men a distance of 12 feet, reef from 6 inches to 2 feet, value 1¼ ounces per ton. Stone raised 15 tons.—E shaft. We have continued from the back of north level with two men, reef average 18 inches, value 15 dwts. per ton. Stone raised 30 tons.—F shaft. Have continued from the back of 80 feet south level, reef average 2 feet, value 1½ ounces per ton. Stone raised 32 tons.—G or main shaft. Have squared down bottom of shaft, and are now engaged in opening out chamber to the west; ground hard.—No. 2 main shaft. Have timbered shaft 6 feet, put in sole pieces for opening out sets in position, and are now opening out plat west side of shaft.—Crusoe East lease. C shaft. We have cut a plat for a winze, and sunk it 7 feet from south level at the 81 feet, reef averages 1 foot. Have also started leading stope from the back of this level, reef average 1 foot, showing a little gold. Stone raised 20 tons.—Machinery. We have cut out for the foundations of the winding engine at G shaft, and are making good headway with cutting out for the battery foundations. The team is engaged in bringing in battery timber. The contractor for the firewood has delivered about 300 tons. We are crushing from B and E and F shafts, and shall clean up to-day.

MENZIES GOLD DEVELOPMENT.—Extract report of mine manager, dated July 16: Sinking and driving total for the week 64 feet. In lease No. 1413 at 100 feet level in crosscut at 193 feet cut a formation 2 feet wide, carrrying gold-bearing quartz vein 12 inches thick.—Extract report of mine manager, dated July 23: Sinking and driving total for the week 75 feet. In shaft on lease No. 3 55 sunk on the boundary of Leonidas lease (which contains valuable veins), at a depth of 90 feet, some small gold-bearing leaders are coming into the shaft.—Lease No. 3051. Water shaft continues flowing at the rate of 2000 gallons per day. Stock water in tanks 38,000 gallons.—Lease No. 1423. In crosscut at 100 feet level cut gold-bearing leader at 206 feet 3 inches along the crosscut.

MENZIES GOLD REEFS PROPRIETARY.—The following information is to hand from the manager at the mines, under date Menzies, August 8:—Friday lease A shaft. Have extended No. 3 south level a further distance of 13 feet, total from crosscut 25 feet. There is considerable improvement in the reef during the last few days; it will now average 14 inches, heavy mineralised stone, assay value 1 ounce 8 dwts. 20 grains of gold and 1 ounce 4 dwts. 16 grains of silver per ton. We have driven No. 2 south level a further distance of 19 feet, total 160 feet. Reef averages 15 inches good quality stone. Have driven No. 2 north level a further distance of 5 feet, total 105 feet. Reef averages 5 inches 1 ounce stone. Have continued stoping from the back of No. 2 north and south levels. Reef averages 1 foot good stone. The stopes from the back of No. 1 north and south levels show an average of 9 inches of reef, value 1¾ ounce per ton. Stone raised for the fortnight 150 tons.—Defoe lease. Have sunk the new vertical or B shaft a depth of 21 feet, total 33 feet from the surface. We have to timber this shaft, ground good.—Lady Shenton No. 1. D vertical shaft has been sunk a further depth of 41 feet, total 56 feet; ground continues good for sinking. Have sunk E vertical shaft, which is situated about 155 feet north of D shaft, to a depth of 25 feet. Logged up and fixed brace.—Excess lease O shaft. Have sunk this shaft a further distance of 30 feet, total 42 feet from surface. Reef still keeps small, from 4 to 6 inches, and prospects for about 2 ounces per ton.—Nada lease A vertical shaft. Have sunk this shaft a further depth of 58 feet, total 74 feet from surface. We are in very promising looking country for reef.—Selkirk. Have extended south drive from A underlie shaft a further depth (distance) of 27 feet, total 42 feet from shaft. Reef average 6 inches poor quality stone.—B underlie shaft. Have sunk and timbered this shaft, which is 6 feet wide by 5 feet high in the clear, a further depth of 14 feet, total 31 feet. Reef average 15 inches poor quality stone.—Battery. Have completed roof over hoist, stonebreaker, belting, &c. The contractors for firewood for the battery are delivering about 60 cords a fortnight. The contract for 100 cords at the Friday Mine is nearly completed. The team is engaged in carting in mining timber for the different leases.

9 MILE PROPRIETARY.—Extract from the mine manager's report, dated July 9:—Gimlet lease 647, 20 men employed. Main shaft 86 feet level drove on the reef 20 feet south-south-east, and put in sets. Drove on reef 22 feet 6 inches north-north-west, making a total of driving 139 feet. Have started to stope over back of level 6 feet high by 6 feet long, reef about 12 inches. Crushed 80 tons fine mullocky stuff and partly white quartz from the dump to make room about the shafts. Result 80 ounces 18 dwts. smelted gold of very good quality. Ore at grass last report 65 tons. Since raised 45 tons, carted to battery 80 tons, leaving now at grass 30 tons.—Gimlet lease 230. Eight men employed. No. 1 shaft on reef south-south-east 8 feet 6 inches, previously about 30 feet, making a total of 30 feet 6 inches. Drove north 8 feet, reef about 15 inches.—Caledonian lease 626. 12 men employed. Main shaft drive extended 15 feet, making a total of 135 feet from crosscut. Reef in end of drive at present 2 feet 6 inches. Ore at grass last report 172 tons, since raised 20 tons, making total now 192 tons. Have started to stope in Robertson's shaft, where stoping had been done before in about 8 feet. Reef 2 feet 6 inches.—Proprietary lease 229. 12 men employed. Have started a main shaft, which is down 10 feet, timbered up 8 feet. Shaft is 12 feet long by 4 feet wide, within timbers. Will log up brace as soon as I can get logs, and then put on three shifts of men to push on as quickly as possible.—Nos. 1 and 2 shafts. No. 2 shaft driven 20 feet north-north-east and 15 feet south-south-west, total length of drive 36 feet, reef 2 feet. Have timbered the drive as work proceeded. Ore raised 20 tons, making 175 tons. No. 4 shaft sunk further depth of 4 feet, total 66 feet. Reef about 2 feet. Raised 4 tons ore, making total at grass of 41 tons. No. 5 shaft sunk 7 feet 0 inches, making 53 feet. Raised 3 tons, making total at grass 33 tons.—Extract from the mine manager's fortnightly report dated July 22. Gimlet lease 827. 21 men employed.—Main shaft 89 feet level. Have driven on reef 18 inches south-south-east, making total length of drive 140 feet 6 inches. Stoped over back of drive 24 feet long, 7 feet high. Stoped north-north-west 13 feet. Ore at grass last report 30 tons. Since raised 15 tons. Carted to battery 35 tons. Now at grass 10 tons. Have started another shaft about 100 north-north-west of main shaft. It is down 18 feet. This shaft was sunk to see if the reef could be picked up further north-north-west. Struck some time stone about 4 feet down, good appearances, but no gold visible.—Lease 230. Three men employed. Drove north-north-west 8 feet, making 16 feet. Reef 15 inches wide. Drove south-south-east 18 inches, making total distance from the shaft of 40 feet. The crosscut that is south-south-west of shaft is in 12 feet. Drove on the body of stone 7 feet, and it is in 12 inches wide. Ore at grass last report 3 tons. Since raised 3 tons, making now 6 tons.—Caledonian lease 626, 13 men employed. Robertson shaft stoped about 9 feet. Reef 18 inches wide. Ore at grass last report 5 tons. Since raised 5 tons, making total at grass 10 tons.—Proprietary lease 229. 21 men employed. New main shaft has been sunk a further depth of 25 feet, making 35 feet from brace and is timbered down 30 feet.—Shaft Nos. 1 and 2.—No. 2. Have driven on reef south-south-west 18 feet. Reef about 12 inches wide. Have driven north-north-east 20 feet, making total length of drive 124 feet. Ore raised 11 tons, making 185 tons at grass.

MYALL'S UNITED.—Manager's report for week ending August 1:—Main (vertical) shaft. Sunk 6 feet, now 254 feet 6 inches down. The ground is a little easier, and the water slightly less.—No. 1 (underlie) shaft. The winze from No. 2 level and rise from No. 3 were connected on July 26, giving ample ventilation for the stopes between the two levels, and enabling us to open up this block of stone to the best advantage. Preparations have been made to start a rise from the old workings over No. 2 level, and two shifts of men will be at work here next week. From the stopes have sent to surface about 40 tons. The crosscut (exploratory) from No. 1 to main shaft extended 14 feet, now 60 feet from No. 3 level. Have passed through a small leader of quartz charged with a little pyrites, but dish trials failed to show gold. This leader is giving about 650 gallons of water in 24 hours, and the country traversed by it is of a kindly nature for quartz. A little prospecting drive can be sent after it later on.—Reidie's shaft. Drive north at 158 feet level extended 11 feet, now 20 feet from old stopes. It carries about 3 feet 6inches of quartz of low grade. Is in soft ground, and can be cheaply broken. No. 2 south shaft has been cleaned out and timbered another 6 feet, now 144 feet from brace, and hope to bottom it in a few feet. This is an old shaft in the spare ground, which was full of mullock and broken timber, making it a slow and dangerous task to bottom it. As mentioned in a previous report, there is a quantity of stone about this shaft. The battery is kept running with 15 heads on stone from the stopes over No. 3 level, and an increased yield is indicated by amalgam taken from plates since I started the present crushing.

MOUNT ROWE CONSOLIDATED.—The manager under date of August 12 reports as follows:—The north drive has been extended 5 feet, making a total of 193 feet. The south drive on the lode has been extended 3 feet, making a total of 95 feet. The driving at the bottom level is still standing, owing to the water being too high in the shaft for the men to work in the drives. We are getting the tanks fixed into position so as to conserve the water and make everything automatic from the bucket to the condenser. We hope soon to have them completed, and the condenser going, when we shall be able to deal with the water and also continue the drives at the bottom level. The drive at the 230 feet level—Richmond shaft—has been extended 14 feet, making a total of 31 feet. The water supply is still about the same.

MOUNT LYELL MINING AND RAILWAY.—Engineer in charge of mine reports for week ending July 31: No. 1 tunnel, north drive. Distance driven for week 3 feet, total 62 feet, no change to report.—No. 3 tunnel, main crosscut. Distance driven for week 10 feet, total 337 feet. This drive has now been extended to the hanging wall.—No. 4 tunnel, south drive. Distance driven for week 5 feet, total 541 feet, no change.—No. 4 tunnel, south drive, No. 3 ore scut. Distance driven for week 3 feet, total 69 feet, face getting harder.—No. 4 tunnel, south drive, No. 2 rise. Stoping ore has been carried on at this rise.—No. 4 tunnel, south drive, No. 3 rise. Ore has been stoped at this rise.—Surface work, bench No. 1. Stripping of overburden has been proceeding steadily.—Bench No. 2. Excavation of ore for smelters and stripping overburden has been carried on during the week.—No. 2½ bench. Excavation of overburden has been carried on at this part of the workings.—The chief metallurgist reports for week ending July 31: Smelting plant. Storage room for converter matte is being arranged near the converter building. Plant running well on ore and concentrating first matte.—Converter plant. Main trusses of building over converter room all in place, erecting posts and trusses of crane room. Weather variable.

NORTH KALGURLI.—The directors have the pleasure of submitting to the shareholders the following information concerning the work which had been done on their property from March 25, when it was visited by Dr. Scheidel, up to July 31, the date of the last advices from the mine. It will be remembered that Dr. Scheidel makes use of the following nomenclature:—The lode nearest to the south-western boundary of the property is termed No. 2 lode, and the shaft in which it is cut is termed shaft No. 3. The next lode is termed lode No. 1, and the shafts in which it is cut are termed shafts Nos. 2 and 4. The lode which is cut by the main shaft is termed lode No. 3. The lode nearest to the north-eastern boundary of the property is termed No. 4 lode, and the shafts which cut it are termed shafts Nos. 6 and 7.—Main shaft. The main shaft has been continued down to a depth of 165 feet below the surface, at which point water was obtained, the shaft making about 400 gallons per day. The shaft was then cut down and timbered to the 86 feet level.—No. 2 shaft. This shaft has been continued to a total depth of 23 feet. The manager proposes to crosscut to the west at the 40 or 50 feet level to cut the rich seam of gold which passed out of the shaft to the west.—No. 3 shaft. The drive south of the lode in No. 3 shaft has been continued up to the southwest boundary of the mine, making a total of 32 feet. A drive has also been started north along this lode and driven 13 feet, but the lode then became broken. In the southern portion of the drive this lode had been from 8 inches to 2 feet 6 inches wide, giving in some parts assays varying from 10 dwts. to 30 dwts. to the ton, and in other parts fair dish prospects.—No. 6 shaft. In No. 6 shaft a drive south from the shaft has been driven 48 feet. The lode is about 1 foot wide, but is somewhat broken in parts. The ore obtained has been of good grade, and in some places has assayed upwards of 3 ounces to the ton. A north drive has also been started from the same shaft and driven 31 feet on the lode up to connection with No. 7 shaft. The lode has varied in size, sometimes being very small, and at other times extended to 2 feet 6 inches in width. The assays have varied from 1 ounce 11 dwts. to 2 ounces 14 dwts. to the ton. It will be seen from the above that good gold has been proved in this reef for a distance of 129 feet. A small quantity of very rich ore has also been obtained from a stope on this reef.—Block 444. A shaft about the centre of block 444, which was previously down 37 feet, has been sunk to the 64 feet level. A drive west has then been started, meeting the formation 26 feet west of shaft. A southern drive on this formation has been extended 31 feet. The lode has varied from 2 feet to 3 feet in width, and given at times good dish prospects. At the end of the 31 feet the formation became broken. Another shaft (called No. 4 shaft of block 444) 120 feet away, has been continued to a depth of 44 feet, and the formation intersected by an eastern crosscut. At the point of intersection the formation was 2 feet wide, carrying a little fine gold. The manager is now driving south on the lode.—General. Writing under date July 20, Mr. J. Howell reports as follows on the mine:—The various drives and openings continue to disclose very fair grade ore, and whilst nothing of a sensational character has been met with, the property all round continues to improve considerably. The ore bodies are not yet very regular, but they carry very good ore, and the indications in block 444, particularly close to 287, are becoming more favourable.

No. 7 NORTH-EAST QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers:—I have the honour to report that Wherry and party cleaned up their crushing of 53 tons 6 cwts. on the 29th inst. which returned 112 ounces 19 dwts. 21 grains of smelted gold. Their

stopes still show from 6 to 20 inches of somewhat similar quality stone. The tribute percentage received by the company from the crushing amounted to £67 6s. 7d. Ferguson and party are putting through a crushing of about 17 tons, which I think is looking poor. At present they are endeavouring to get on to the reek worked by Penhallurick and party. Penhallurick and party's stope is looking very well, carrying about 2 feet of stone of good quality, and has the appearance of making bigger as they go on. The timbering of the shaft is not quite finished, though good progress is being made. I think we shall finish during the next week. We have hauled 98 tons of quartz for the fortnight.

YALGOO PROPRIETARY.—Manager's report dated August 8: The Sovereign north. The vertical shaft has been further sunk a depth of 5 feet, total depth 89 feet. The country passed through is now much more settled, which renders sinking much easier. During most of the past fortnight two shifts of men have been employed. In addition ladders have been fixed in position in accordance with the regulations (mining).—The Sovereign P.C. main shaft. The main shaft has been further sunk 11 feet with two shifts of men, total depth 32 feet. It has also been timbered and partitioned for a depth of 29 feet.—No. 1 underlay shaft. The drive north on the reef is now 13 feet at the 175 feet level, an increase of 5 feet for the past fortnight. The reef still maintains its width of 4 feet of solid stone, and drillings give good gold prospects. Stone of very promising quality is now being raised.

INDIAN.

CHAMPION REEF.—Fortnightly report of Captain James Rowe, superintendent, dated August 24:—Dalyell's shaft. This shaft has been sunk below the 940 feet level 4 feet, total depth below level 4 feet. Lode 3 feet wide, assaying 1 ounce 20 grains of gold per ton.—Garland's shaft. No sinking has been done, as we are engaged cutting cistern and tip plate at the 1040 feet level. The lode in the shaft is 3 feet wide, assaying 1 ounce 10 grains of gold per ton. The 1040 feet level north has been driven 12 feet 9 inches, total length 147 feet 3 inches. Lode 1 foot 9 inches wide, assaying 1 ounce 8 dwts 22 grains of gold per ton. No. 1 rise above level risen 7 feet 3 inches, total height 42 feet 9 inches. Lode 2 feet wide, assaying 1 ounce 5 dwts. 10 grains of gold per ton. The 1040 feet level south driven 21 feet, total length 92 feet 6 inches. Lode 1¼ feet wide, assaying 1 ounce of gold per ton. No. 4 rise in back of 940 north risen 2 feet 6 inches, total height 35 feet. Lode 2 feet wide, assaying 1 ounce 1 dwt. 10 grains of gold per ton. Winze below level sunk 6 feet 3 inches, total depth 41 feet 9 inches. Lode 2 feet wide, assaying 1 ounce 18 dwts. of gold per ton. The 840 feet level north driven 7 feet 6 inches, total length 942 feet 9 inches. Lode 2 feet wide, assaying 1 ounce 8 dwts. 16 grains of gold per ton. Incline winze below level on back of shoot sunk 1 foot 6 inches, total depth 18 feet. Lode 3 feet wide, assaying 1 ounce 3 dwts. of gold per ton. Level north from bottom of winze below 740 north to meet with 640 south of Ribbledale's shaft driven 13 feet 6 inches, total length 46 feet. Lode 1 foot 9 inches wide, assaying 1 ounce 11 dwts. 7 grains of gold per ton.—Ribbledale's shaft. The hanging wall of this shaft being very heavy and requiring more timber than we expected we have not done anything in sinking but are engaged putting in the necessary timber required. The 740 feet level north has been driven 17 feet 3 inches, total length 146 feet 6 inches. Lode 6 inches wide, assaying 15 dwts. 16 grains of gold per ton. The 740 feet level south on east part driven 13 feet, total length 129 feet 9 inches. Lode 1 foot wide, assaying 1 ounce 5 dwts. of gold per ton. The 840 feet level south of east crosscut on east part has been driven 13 feet 6 inches, total length 419 feet 9 inches. Lode 1 foot 9 inches wide, assaving 14 dwts. 14 grains of gold per ton. The 640 north of east crosscut driven 16 feet 6 inches, total length 16 feet 6 inches. Lode 1½ foot wide, assaying 18 dwts. of gold per ton.—Carmichael's shaft. This has been sunk 7 feet 6 inches, total depth below the 640 feet level 70 feet 3 inches. Lode 1 foot wide, assaying 1 ounce 3 dwts. 8 grains of gold per ton. The 640 feet level north on west part of lode has been driven 5 feet 6 inches, total length 175 feet 6 inches. No sample. We are now engaged driving crosscut in a north-east direction to meet with east part of lode. Crosscut has been driven 18 feet. Level north of 640 north of middle part of fold has been driven 31 feet, total length 21 feet. Lode 6 feet wide, assaying 1 ounce 6 dwts. 12 grains of gold per ton. Level driving back south of 540 north of east crosscut on turnover of lode driven 18 feet, total length 18 feet. Lode 4 feet wide, assaying 2 ounces 6 dwts. 22 grains of gold per ton. The 440 feet level north of east crosscut at 440 north driven 19 feet, total length 262 feet. Lode 3 feet wide, assaying 1 ounce 13 dwts. 16 grains of gold per ton.—Rowe's shaft. This has been sunk 12 feet 3 inches, total depth below the 615 feet level 31 feet 3 inches. Lode 3 feet wide, assaying 1 ounce 18 dwts. 23 grains of gold per ton. Rise above 615 north risen 1 foot 6 inches, total height 15 feet. This is suspended and we are engaged putting a stope over back of level. Lode 2 feet wide, assaying 2 ounces 5 dwts. 20 grains of gold per ton.—New Vertical shaft. This has been sunk 8 feet, total depth 235 feet 3 inches. The water has increased here, which has retarded the sinking. We have fixed a 4 inch donkey pump in this shaft to cope with the water.—Stopes: We have 80 stopes working throughout the mine, average width of lode 4½ feet, average assay value 1 ounce 9 dwts. 12 grains of gold per ton.—Labour. We are still short of coolies for working the rock drills, consequently the progress is not as good as formerly.—Cyanide works. We are pushing on with the erection of this as fast as possible.—Health. The health of the employés is now fairly good. We have had no fresh cases of cholera lately.

COROMANDEL.—Superintendent's report for fortnight ending August 22: Prospect shaft. This shaft has been sunk 4 feet, making a total depth of 748 feet 8 inches. The quartz is 5 feet wide, and assays 6 dwts. of gold to the ton.—602 feet level north. This has been driven 35 feet, making a total length of 315 feet from the crosscut. This end is still in the dyke.—500 feet level south. The crosscut west of this level has been driven 27 feet, making the total length 86 feet. There is no change in this end.—Rise back of 200 level north. This has been carried up 6 feet, making a total of 16 feet. The quartz is 3 feet wide, assaying 1 ounce 9 dwts. of gold per ton.—East shaft. The skip road above to the 320 has been completed, and we shall now proceed to make good the shaft from the 440 down to the 500.—560 level north. This has been driven 3 feet, making a total length of 223 feet 6 inches. The quartz is 20 inches wide, and assays 7 dwts. of gold to the ton.—Coromandel shaft. This has been sunk 9 feet, making a total depth of 29 feet 6 inches below the 420 feet level.

GOLD FIELDS OF MYSORE.—Mine report for fortnight ending August 24: —South shaft. Satisfactory progress is being made with the preparatory work necessary to enable us to resume the sinking of this shaft below the 570 feet level. We completed the cutting of ground to make room for the rise to middle shaft from the crosscut west at the 470 feet level north on Wednesday last, since when we have risen 2¼ feet. In the 470 feet level south the quartz is 3½ feet wide, assaying 3 dwts. 22 grains of gold per ton. During the two weeks 11 feet were driven, making a total of 301 feet. The winze below this level is down 7¼ feet, and the quartz in the bottom is 4½ feet wide, yielding 6 dwts. 12 grains of gold per ton. There is no change in the crosscut west from the 380 feet level north, the total length of which is now 305 feet, showing an advance of 14 feet in the two weeks. In the 380 feet level south from the crosscut east the lode is 5 feet wide, all quartz, and it assays 5 dwts. 21 grains of gold per ton. Since the last report the level has been extended 17 feet, making a total of 518½ feet. In my last the total was given as 479½ feet instead of 501½ feet.—Stopes. Back of the 380 feet level south No. 1, quartz 8 feet wide, value 3 dwts. 22 grains of gold per ton. Back of the 380 feet level south No. 2, lode 3 feet wide but rather disordered, assaying 3 dwts. 6 grains of gold per ton. Below the 380 feet level south, quartz 4½ feet wide, yielding 10 dwts. 11 grains of gold per ton.—Middle shaft. The sinking of this shaft below the 380 feet level is being proceeded with, and fair progress is made as we have reached a depth of 28 feet below the level.—Ajjapullie. In the fortnight the crosscut west was extended 14 feet, making the total 18 feet. We are in lode matter carrying stringers of quartz, assaying 16 grains of gold per ton. The sinking of the trial shaft will be resumed immediately we have completed the timbering of another 15 feet.—Cyanide works. The erection of this plant has been so far completed that we hope to start it during the present week.

ORIENTAL.—Mine report for fortnight ending August 22: Taylor's engine shaft. The total depth of this shaft is 188 feet, of which 8 feet were sunk in the last two weeks. After getting through the lode referred to in my previous reports the hanging wall became very heavy, and the shaft had to be timbered down as close as possible.—Bridge shaft. The driving of the 165 feet level north has been resumed, 10 feet being driven, making its total length 62 feet. The lode is about 3 feet wide composed principally of country rock intermixed with stringers of quartz, and a sample from it assayed 2 dwts. of gold per ton. There is a little water oozing from the present end. In the 165 feet level south the lode of quartz is very regular, and it is 2½ feet wide with an assay value of 2 dwts. 15 grains of gold per ton. The level was extended 6 feet in the fortnight, making a total of 28 feet. The total length of the 105 feet level south is now 216 feet, showing an advance of 9 feet. The lode is about 3 feet wide, composition mostly quartz slightly intermixed with country rock. The sample taken from it yielded 3 dwts. 22 grains of gold per ton on assay.

OOREGUM.—Superintendent's report for fortnight ending August 24: Taylor's shaft sunk 11 feet 6 inches depth below the 960 feet level 75 feet 6 inches. No change in the size of lode or character of strata. The 960 feet level south driven 18 feet, total 141 feet. Lode improved being 1 foot 6 inches in width and carries 1 foot of quartz, assay value 6 dwts. 12 grains. The 960 feet level north driven 13 feet, total 63 feet. Lode still pinched. The 880 feet level south driven 16 feet, total 442 feet 6 inches. Lode 3 feet 6 inches wide, assay value 11 dwts. 5 grains. No. 1 winze 880 feet level south sunk 1 foot 6 inches, total 33 feet 9 inches. Lode 6 inches wide, assay value 1 ounce 6 dwts. 2 grains. No. 3 winze 880 feet level south sunk 4 feet 3 inches, total 8 feet 3 inches. Lode 1 foot 6 inches wide, assay value 2 ounces 7 dwts. 21 grains. The 880 feet level north driven 13 feet, total 200 feet. Lode 5 feet wide, assay value 17 dwts. 10 grains. No. 1 winze 860 feet level north sunk 1 foot, total 18 feet. Lode 1 foot 6 inches wide, assay value 1 ounce 17 grains. No. 1 rise 860 feet level north commenced, risen 10 feet 6 inches. Lode 3 feet 6 inches wide, assay value 1 ounce 3 dwts. 22 grains. No 6 winze 760 feet level south commenced, sunk 4 feet. The lode being small no sample was taken. Wallroth's shaft sunk 6 feet, total 1345 feet 9 inches. The lode has improved in the south end of shaft where it is from 6 to 8 inches wide chiefly quartz interspersed with arsenical pyrites and copper ore. A wash from which showed a trace of gold. It is trending towards the north end of shaft, and the strata is congenial. The 1060 feet level south driven 14 feet 3 inches, total 431 feet 9 inches. No change in character of lode which continues pinched. The 1060 feet level north driven 11 feet 3 inches, total 319 feet 9 inches. No. 1 winze in this level sunk 4 feet, total 66 feet 9 inches. The lode at each point is small and of no value. The 960 feet level north driven 10 feet 6 inches, total 252 feet 3 inches. Lode 3 inches wide, assay value 4 dwts. 8 grains. The 760 feet level north driven 7 feet, total 523 feet. Lode 3 inches wide assay value 3 dwts. 6 grains. No. 3 winze 760 feet level north sunk 2 feet 6 inches, total 21 feet 3 inches. Lode 2 feet 3 inches wide, assay value 13 dwts. 2 grains. The 460 feet level north driven 12 feet, total 408 feet. Lode small and of no value. No. 2 winze 460 feet level north sunk 4 feet 6 inches, total 53 feet 6 inches. Lode 2 feet wide, assay value 15 dwts. 6 grains. No. 2 winze 360 feet level north sunk 2 feet 3 inches, total 57 feet 9 inches. Lode 4 inches wide, assay value 2 dwts. 4 grains. The 215 feet level south driven 20 feet, total 470 feet. Strata unchanged, still intermixed with stringers of quartz. No. 1 winze level south from crosscut east, 215 feet level south, commenced.—Sunk 4 feet 6 inches. Lode 2 feet wide, assay value 6 dwts. 12 grains. Level north from crosscut east 215 feet level north driven 11 feet 9 inches, total 28 feet. Lode 2 feet 6 inches wide, assay value 8 dwts. 17 grains. Low's shaft sunk 10 feet, total depth 374 feet 10 inches. The 810 feet level south from point of intersection driven 24 feet 6 inches, total 272 feet 6 inches. Lode continues pinched. No. 1 winze 810 feet level south from point of intersection sunk 8 feet, total 15 feet. Lode 2 feet wide assay value 3 dwts. 6 grains. The 810 feet level north from point of intersection driven 8 feet 6 inches, total 162 feet. Still driving on crosscourse. No discovery. No. 1 winze 810 feet level north from point of intersection sunk 6 inches, total 17 feet. Lode 2 feet wide, assay value 4 dwts. 8 grains. No. 1 rise 810 feet level north from point of intersection risen 2 feet, total 4 feet. Lode 3 feet wide, assay value 6 dwts. 12 grains. The 710 feet level south driven 9 feet 9 inches, total 412 feet 9 inches. Lode 9 inches wide, assay value 9 dwts. 19 grains. No. 2 winze 710 feet level south sunk 3 feet 6 inches, total 66 feet 9 inches. Lode 1 foot 9 inches wide, assay value 2 dwts. 4 grains. No. 3 winze 710 feet level south sunk 2 feet 3 inches, total 11 feet 6 inches. Lode 1 foot wide, assay value 5 dwts. 10 grains. The 610 feet level south driven 1 foot, total 308 feet 6 inches. Lode very small. The 510 feet level south driven 1 foot, total 457 feet 9 inches. Lode very small. Suspended. No. 2 winze 510 feet level south sunk 4 feet, total 46 feet 3 inches. Lode 1 foot wide, assay value 3 dwts. 6 grains. —Probyn's shaft. The 1050 feet level south driven 12 feet, total 240 feet 6 inches. Lode 2 feet 6 inches wide, assay value 5 dwts. 10 grains. No. 1 winze 1050 feet level south sunk 4 feet, total 58 feet 6 inches. Lode 1 foot wide, assay value 7 dwts. 15 grains. Throughout the mine 70 stopes are being worked, which will be measured at end of month, and full particulars given in next report.

AFRICAN.

BUFFELSDOORN A.—The Johannesburg Consolidated Investment Company are in receipt of manager's report for July from the above company, which contains the following:—Total development 425 feet.—Underground. The work has proceeded without interruption in most parts of the mine, but progress has been retarded in the main shaft workings by the lack of drill sharpeners.—Main shaft workings. The shaft has advanced 89 feet, making total depth to August 1 402 feet. It continues in footwall. Sinking by hand. —500 level. The new west drive was started July 7, and is in reef and looking well. Assays have gone up to 1 ounce 5 dwts., the best being next the foot. The new east drive will soon be started.—400 level. West drive continues in the foot and in strong reef. East drive continues in reef, and returns have gone to 1 ounce 18 dwts. East winze No. 1 assays fairly well, samples from lower 2 feet having gone as high as 1 ounce 18 dwts.—No. 2 shaft workings. Shaft continues in reef at 450 feet deep. Reef is very pyritic, but shows no coal seams.

EAST NIGEL GOLD.—Report for the fortnight ending August 15; No. 3 incline has been sunk a further depth of 12 feet during the last two weeks, making the total depth 192 feet. The air drive has been driven a further 14 feet, making a total length of 51 feet. There is a further 100 feet yet to be driven to connect with incline A. The drift is pretty hard now, as we are in a break and the shale has been cut out temporarily. The reef in the shaft is holding its own. The reef was sampled last week in the bottom of the incline, and returned an average of 2 ounces 12 dwts. per ton over a stoping width of 7 inches. We shall start drives on the 200 feet level next week. The timbering of No. 2 incline is going on well. The battery is going up rapidly, and will probably be completed during September.—H. C. Banon (manager).

GINSBERG.—Monthly report for July:—Development. During the month mine development amounted to 682 feet 6 inches.—Battery. 10 stamps ran 30 days 22 hours, crushing 1331 tons of ore, yielding 692 ounces smelted gold, equal to 10·41 dwts. per ton.—Cyanide works. 1000 tons of tailings treated, yielding 392 ounces, equal to 7·84 dwts. per ton.—General. Average assay value of samples treated during the month was 16 dwts. 19 grains over an average reef width of 1 foot 5 inches. The contractor has made good progress with the erection of new works. The new winding engine is now completed and works satisfactorily, as also the battery engine. We are now erecting the tailings wheel and laying the main water pipes from the dam to the reservoir. All the timbers for the cyanide plant are ready to put in position as soon as the foundations are ready. These foundations will take 10 days to set before putting on our vats. If all material comes to hand, that is dynamos and pump column, we should be ready to start our 40 stamps by October 1.—E. Fern, manager.

NAMAQUA COPPER.—Abstract of superintendent's report for July:—Tweefontein Mine. The shaft has been timbered from the 125 fathom level to the 140 fathom level.—140 fathom level east. Not much has been done here, but the driving will be pressed on as soon as the plot, &c., has been finished.—125 fathom level east. The breadth of the ore ground laid open here is about 15 feet. The eastern face of the driving shows a patch of quartz rock, but at both south and west it looks very encouraging. A fair proportion of the ore is of good quality, and although much mixed with gangue it is expected to give ore of good percentage when dressed. Worth 5 tons of ore per fathom.—115 fathom level east. The level has now reached the eastern side of the crosscourse, but is not yet far enough north to reach the copper ground above the 125 fathom level, should it extend as high as this. Rich stones of ore have been found in and around the crosscourse.—Stopes. 115 fathom level east and west of shaft, 105 fathom level east and west of shaft, 95 fathom level west of shaft. These stopes continue to yield their usual quantities of ore, and are each worth 7 tons of ore per fathom.—No. 2 shaft, intermediate level. The level has now been driven far enough to admit of a winze being sunk through to the back of the 25 fathom level, and this is now being done. There is evidently a large body of mineral about this place. Worth 8 tons of ore per fathom.—Intermediate level south. The level has passed through ground of the same class as that referred to above, and is worth 7 tons of ore per fathom.—Stopes. The stopes continue to look well, and are worth 8 tons of ore per fathom.—No. 3 shaft. Preparations are being made for sinking the shaft deeper as quickly as possible, for the purpose of proving and working the ground east of No. 2 shaft.—No. 4 shaft. Stope in the bottom of the 12 fathom level. This stope continues to look well, and is worth 8 tons of ore per fathom.—No. 5 shaft. West driving. There is no change to notice. Stones of ore are occasionally found.—Wheal Julia, Central shaft. The total depth of this shaft is now 31 fathoms.—30 fathom level south. A crosscourse will be driven to intersect the lode which is underlying towards the south.—Shipping. The *Magnet* arrived at Swansea on September 8 with about 775 tons of ore. The *Anassan* and *Hinda* left Port Nolloth for Swansea on September 10 with about 1450 and 700 tons of ore respectively.—Output for August 600 tons of ore of 27 per cent.

NEW KLEINFONTEIN.—Summary of operations for the month of July: Your company's operations are still progressing very satisfactorily. Development is being pushed ahead with much greater facility, and you will observe from the return that very encouraging progress is being made. Rapid progress is being made with the erection of the new milling installation, and the same is well in hand. The following is a statement of the total expenditure for the month: Development, 23,520 tons of ore developed £4330 10s. 1d. against 11,728 in June.—Capital account, permanent mine £1065 0s. 3d., machinery and plant £10,759 16s. 11d., buildings £409 0s. 5d., furniture £12 1s. 3d., live stock and wagons £198, general charges and maintenance, £1203 3s. 5d., total £17,724 12s. 3d.—Mine development, eastern section No. 1 main shaft. This shaft is down to a depth of 664 feet (as on July 31). Sinking has been stopped during the month in order to cut station and start driving east and west.—Central section No. 2 main shaft. This shaft is down 740 feet (July 31). The work in this shaft was greatly retarded through accumulation of water and the fixing of pump; however, sinking has been resumed, and will be proceeded with with all speed.—Western section. This shaft has now reached the first level at a depth of 71 feet; driving east and west on the reef will be commenced immediately. Total ore reserves on July 31 245,690 tons, against 222,170 in June, with an average assay value of 12 dwts. per ton.—Development. Number of feet driven and sunk 1045, against 710 in June.—George Farrar and G. W. Higgins, Mine and Finance Commitee.

RANDT GOLD.—Extract from report for month of July from mine manager, Malcolm J. Wright:—There has been a great improvement in our facilities for working, which have materially contributed to the better and more economical handling of reef and waste matter, and the water difficulty that existed in our No. 3 shaft. We are now in regular working order, and it gives me pleasure to assure your board that there should be no cause or obstacle to prevent our developing operations being progressed rapidly.—Footage sunk and driven for July:—No. 2 shaft. Total depth 57 feet. Footage for month, 31 feet. No. 3 shaft, sinking. Total depth 250 feet. Footage for month, 32 feet.—Drives. No. 1 level east. Total feet driven 127¼ feet. Footage for month, 57 feet. Ditto west. Total feet driven 123 feet. Footage for month, 58 feet.—Crosscut. Total feet driven 37 feet. Footage for month, 37 feet.—Chamber. Total feet driven 8 feet. Footage for month, 8 feet.—No. 4 shaft. Total footage inclined, 5 allowed, 57 feet, footage for month 57 feet. Total 63 feet. Total footage 274 feet.—Ore in sight. Estimate from No. 1 level. 15,788 tons, 6175 tons allowed for pillars, gross total 12,631 tons. No. 2 shaft. During the month we were only able to gain 31 feet in our sinking. It is satisfactory to report that we are within a few feet of our first level, and I anticipate driving in the early part of this month, so as to connect up with No. 3 shaft.—No. 3 shaft. The angle of the formation is 50°, and for the last 40 feet it has been steepened to 65°. My object in maintaining this latter grade is to gain our pay reefs in the face, and to ultimately obtain a uniform grade of the shaft for at least 300 feet. In view of this shaft becoming our main incline, a uniformity of grade for the foregoing distance becomes essential, as all speed and slackening is practically made and gained by the hauling engine over that length.—Drives. West drive. This drive is now in at a distance of 123 feet, of which 58 feet was driven during the month.—No. 1 crosscut north-east. This crosscut has been driven 37 feet. The fact of the hanging wall proving the richer and payable sections of our reefs is a fortunate feature with this property, and is an exception in the battery reef series. This circumstance will only require of our doing half the amount of development, which is usually required by other adjacent mines who are working this series of reefs where they have their payable sections in the footwall, and which necessitates two parallel drives to work the same body of ore, and for which we shall only require one. This fact will be of some satisfaction to your board, as our cost of mining will be greatly minimised. I would also direct your attention to the fact of our payable bodies of ore being increased in two hard walls, and that the ore is of a softy nature, which will be economical to work out. These few facts, I hope, will afford your board much pleasure in knowing.—No. 4 shaft. The depth of this shaft is 40 feet vertical, and 57 feet incline. Of this, the incline section was sunk during the month. Throughout the whole shaft the formation is most regular. We have sunk on 3 feet of No. 2 reef, which has given very exceptional results. As soon as we connect up with No. 1 level of No. 3 shaft we will continue sinking until No. 2 level is reached.—Surface prospecting. I have for the purpose of locating the strike of the reef on our eastern boundary made an open trench. Immediately the outcrop is struck an incline winze will be put down to this trench for a depth to 4 or 5 feet before coming on the reef formation. All open trenches and cuttings that have served the purpose of prospecting are of no further use have been closed in. This work gives our surface a better appearance.—Buildings. The compound has now been completed in two wings with wood and iron. The brick lining is well in hand, and about a third more remains to be finished. The boys are now in occupation of one of the wings, and greatly appreciate the comfort and accommodation. The cook's house is well in hand, and in a few days should be completed. As soon as the compound is done a start will be made with our new stables. During the month we turned out 50,000 bricks for our compound at a cost of 21s. 9½d. per 1000. These were made on the property.—Machinery. A saw bench has been secured, and is in full working order. We are saving greatly by it; indeed, our present estimate of saving runs about ½d. per foot. In conclusion, I have to assure your board that everything is being done for the best advantage and success of the property under my management, and I hope to report each succeeding month the best results that can be anticipated.

VAN RYN.—Battery last month resulted in a loss of £1448. Cyanide works a profit of £972. In consequence of its defective state the old mill has been shut down. The trial start of the new mill (60 stamp battery) will be made next month.

VENTERSDORP GOLD ESTATES.—Since the manager's report up to August 3, issued to the shareholders on August 27, the following advices have been received:—Palmietfontein No. 1. This drill has now been removed to the Modderfontein farm to prove the line of quartzite south of the Black Reef series. This formation runs almost parallel with the Black Reef series east and west. Its outcrop measures 260 feet in width exposed in an old open cutting to the depth of 10 feet. The drill has been placed a distance of 120 feet south of the southern side of the line of outcrop, and it has now been drilled 12 feet through odeclip and loose quartzite.—Modderfontein boundary No. 2. This has now been drilled to a depth of 132 feet, principally through slate. Latest assays show 12 grains of fine gold to the ton between the depths of 110 feet and 117 feet.

WEMMER.—Report for the month of July: Expenditure and revenue. Expenses. Cost. Mining £5841 8s. 11d., cost per ton 17s. 3·083d. Transport £301 15s. 2d., cost per ton 10·697d. Milling £1429 3s. 8d., cost per ton 4s. 2·06d. Concentration £145 19s. 7d., cost per ton 5·175d. Cyanding £959 14s. 2d., cost per ton 2s. 10·022d. Maintenance (surface) £44 13s., cost per ton 1·261d. General charges £687 3s. 4d., cost per ton 2s. 0·361d. Redemption £1389 10s., cost per ton 7s. Total £11,779 7s. 10d., cost per ton 34s. 9·586d. Profit for month £4950 13s. 5d., cost per ton 14s. 7·503d. Total £16,730 1s. 3d., cost per ton 49s. 5·289d.—Revenue. Gold from mill, 3350 2 ounces, £12,122 3s. 6d., value per ton 35s. 9·738d. Gold from cyanide, 916·10 ounces, £3597 18s. 5d., value per ton 7s. 8·097d. Gold from concentrates (estimated) £2005 19s. 4d., value per ton 5s. 11·254d. Total £16,730 1s. 3d., value per ton 49s. 5·026d. The cost per ton is worked out on the basis of the tonnage milled.—Capital expenditure. Development 697 feet 6 inches driven sunk and risen £2741 6s. 5d. Main shaft £9 6s. 4d. Buildings and improvements £314 13s. 11d. Machinery and plant £485 17s. 3d.—£3551 3s. 11d. Less development redemption £2369 10s.—£1181 13s. 11d.—Output. Mill 3350·20 ounces. Cyanide works 916·10 ounces. Concentrates (estimated) 624·75 ounces—4891 05 ounces.—Crushed during the month. South reef 2762 tons, 40·8 per cent. Main reef leader 4008 tons 59·2 per cent.—Mining and development. Feet driven sunk and risen 697 feet 6 inches. Ore opened up by development 17,962 tons. Ore mined 9474 tons. Clean ore for the mill 6990 tons. Wasted picked out (26·22 per cent.) 2484 tons.—Reduction, 50 stamps ran 29 days 11 hours 24 minutes. Ore milled 6770 tons. Duty per stamp per day 4·596 tons. Yield of bar gold 3350·2 ounces. Yield per ton crushe i 9·897 dwts.—Cyaniding. Tailings treated 5000 tons. Yield of bullion 916·10 ounces. Yield per ton treated 3·634 dwts.—Concentration. Tonnage caught 147 tons. Average assay value 4·25 ounces. Fine gold per ton of ore milled 1·845 dwts.—Yield (fine gold) per ton treated. By amalgamation 8·525 dwts. By concentration 1·845 dwts. By cyanide 2·002 dwts. Total extraction per ton 12·372 dwts.

WESTLEIGH MINES.—Progress has been as follows during the past four weeks: West incline, progress 51; total 638. West vertical No. 1, progress 10; total 130. East incline, progress 15; total 272. Total progress, 86.

AMERICAN.

OURO PRETO.—Passagem Mine report for July: 505 end north-east was driven 3·60 metres, and is now nearly full size in ore with only a small bar of schist across middle of end. 470 end north-east was driven 4·40 metres. The schist has died out, and the end is again full size in strong quartz lode. Crosscut at 470 end north-east was driven 4 in footwall schist, and is now very near the winze from 435 level. 470 end south-west from No. 2 shaft was driven 4·50 metres. It is in mixed schist and quartzite, with a branch of ore against the roof. End under 435 in No. 2 shaft was driven 3·80 metres, full size in massive quartz lode. No. 1 winze from 435 north-east was sunk 3·40 metres, and having reached the depth of the 470 level has been suspended. No. 2 winze from 435 north-east was sunk 3·40 metres on the incline in mixed schist and quartz with lines of tourmaline ore. 435 end north-east was driven 3·40 metres. It carries about 1 metre of quartz against the roof with quartzite below. 435 end south-west was driven 2·10 metres and continues in hard quartzite. 400 end north-east was driven 5 metres, and continues full size in strong quartz lode carrying good patches of pyrites. 400 end south-west was driven 6·90 metres in schist without ore. Rise from 365 south-west was advanced 2·30 metres. It is now fairly in the ore shoot from 315 level, being full size in quartz and tourmaline ore. 315 end south-west was driven 4·40 metres. It carries about 1·50 of quartz showing patches of pyrites with schist along the floor. 365 end north-east was driven 3·90 metres. Quartz has continued to rise from the foot, and is now standing full height of the end. This is probably the main Buraco Secco shoot, which has gone off flatter than was supposed. 215 end north-east was driven 270 metres, but continues in quartzite without ore.—Stoping. At the stope in 470 level a false roof was being carried, and now the ore has been taken down, the stopes shows nearly 6 metres thickness of solid quartz, assaying 20 grammes per ton. At the 435 level the stope south-west is in mixed lode carrying a good deal of schist. Between the shafts five stopes are being worked. These continue to produce a great deal of ore, the lode averaging over 6 metres thick, but in the chief stope, which is on the north-east limit of the shoot, the ore is of lower grade than formerly. At the 435 north-east the stope carried more schist than could be disposed of at present, and has been suspended. At the 400 north-east the inner stope is mostly in quartzite, with a branch of ore 2 metres thick. The outer stope continues in good regular lode 4 metres thick. At the 400 south-west the stope at bottom of rise 28 carries a branch of ore 1½ metres thick, the remainder of the lode being quartzite. At the top of rise 328 another stope shows also the same appearance. At the 365 south-west work has been resumed in the inner stopes. The lode is 3·50 metres thick, composed of quartz, with good patches of pyrites and tourmaline ore. The outer stope over 365 south-west is in very mixed lode, the ore being only about 1 metre thick. On the Buraco Secco shoot at the 315 north-east the ore is still extending in each direction under the level, and averages 6 metres thickness, but the output has been restricted by falls of the roof, necessitating building and filling. The inner stopes at 315 south-west are in lode 4 metres thick, but about half of this is schist. The stops under 315 south-west is also producing little ore, the lode being composed chiefly of schist with irregular patches of ore. The stops from 235 south-west continue in very regular quartz. Lode 4 metres thick, and carries a good pyrite branch against the floor. The stope lately started between the shaft at 215 level carries a good deal of quartzite, but the ore is 3 metres thick and assays 31 grammes per ton. This is all being stacked until a shoot in the shaft is made. At the 215 north-east the outer stope continues in strong massive quartz 8 metres thick, but of low grade. The middle stope is chiefly in quartzite, but the inner is opening up well, the quartz being now nearly 4 metres thick and assaying 19 grammes per ton.—Henry J. Gifford.

CRIPPLE CREEK CONSOLIDATED.—The manager writes in the Centre claim on the 29 claims:—The shaft is down to 60 feet. We have a very fine showing on this claim which is between granite walls on either side. I have several assays made from several portions of the vein, and in some instances they have run as high as $1300 to the ton. Of course, this is fine streak of this black iron, which goes to show all that is required is depth.

MISCELLANEOUS.

ALMADA AND TIRITO.—Report for the fortnight ending August 15: Drivages. The lode in Ibarras tunnel south is made up of a light porphyry intermixed with quartz but contains no ore. The 150 feet level south of Taylor's shaft is yielding small quantities of good grade ore, last assay value was 17 ounces of silver per ton. In the 150 feet north of Taylor's shaft the forebreast has undergone no change; small quantities of green ore are still being taken out. The lode in the 150 feet south of Wilde's shaft is of a softish nature, and good progress is being made, the end is mineralised 1 foot. In the 150 feet north of Wilde's shaft the forebreast is without ore, the hanging or eastern wall is well-defined.—Shafts. Taylor's shaft, sinking below the 150 feet level continues to improve, and will now yield 1 ton of ore to the fathom, assaying 110 ounces of silver per ton. The lode in the bottom of Wilde's sinking below the 150 feet level is massive, and the indications are favourable. The lode is mineralised 6 inches.—Stopes. These are yielding larger quantities of ore of a slightly improved grade.—(Signed) James Pellew.

CURTIN DAVIS PROPRIETARY.—Mine manager's report for week ending August 1: 420 feet level driven 5 feet, total 206 feet. Lode shows 15 inches of ore on the footwall, carrying good proportion of fahl ore. The country has been bad for working, being very short grained, but a slide has come in, and behind it the ground appears to be better for blasting. The lode has not been thrown by the slide, but appears to be stronger behind the wall. Eastern crosscut at 140 feet driven 4 feet, total 14 feet. Country blue slate, no change to note.—Winze 20 feet in tunnel. Plat is completed and rails relaid, so that the sinking will not interfere with the driving of the tunnel. Will start to sink winze early next week. 560 feet level driven 8 feet, total 138 feet. Lode shows 15 inches of ore on the footwall, 6 inches of it being high grade fahl ore and copper pyrites, the remainder siderite and iron pyrites. The ground in this drive keeps very fair for working, being clean blue slate. 630 feet level driven 4 feet, total 214 feet. Lode improved, and showing copper pyrites and fahl ore intermixed with siderite and iron pyrites for a width of 2 feet. Country about the same. 840 feet level driven 7 feet, total 176 feet. Lode carrying high grade fahl ore, but at present much disturbed and country broken. Expect to go some distance before getting settled country.—1000 feet level. Have started two men to drive this level from present distance 55 feet, Altogether the mine is generally improving, and lode continues strong as we get further into the hill.

ETHEL HOPE.—The following report of work done has been sent round to the shareholders: Development. An engine shaft has been sunk 45ft point of 140 feet west of the lode line to the depth of 70 feet, timbered complete.—Ethel. Shaft No. 1 was sunk 23 feet, crosscut east 74 feet, where lode was intersected 4 feet wide, assaying 14 dwts. 20 grains. Drives were then made on this reef. South-east 13 feet, at which point the reef cut out, boulder gone downward in the bottom of the drive. North-west 30 feet, reef opening out wider in the bottom of drive and samples taken show fine gold. No. 2 shaft was sunk 52 feet from the brace. Harman shaft sunk and close timbered 86 feet 6 inches from the brace. The underlay of lode opposite this shaft at 22 feet level is 4 inches in 5 feet, at this point the reef is 3 feet 6 inches from the shaft, and is 3 feet wide, carrying good gold. At about 70 feet the mine manager wrote:—"A change took place, branch or leader of ironstone was cut, and it was daily expected to strike the reef. It is irregular, and it may be necessary to drive before reaching it." At the 86 feet 6 inches he writes:—Ground is a little harder; if the reef had kept the same underlie as shown at 22 feet level, we should have had it in the shaft before this. On August 10 last sets of timbers collapsed in this shaft, and manager commenced to sink a new shaft 100 feet south-east following the dip.—Machinery. Bisbey's 16 horse-power hoisting engine and pumping and hoisting plant, 20 horse-power Cornish boiler and all accessories, together with Jack Head Mine pump were sent out, and are in course of erection at the engine shaft. There is also a 12 horse-power portable engine, condensers, and saw mill.—Tierra Seca plant. This has been erected and a trial has been made with it, but it has not treated the ore satisfactorily. It will be recollected this plant was bought for another property and the manager reports that the ore from the Ethel, containing as it does a fair percentage of moist clay, not only clogs on the sieves but also prevents the current of air from doing its duty. Arrangements are, therefore, being made experimentally to dry the ore.—Buildings. The following buildings have been put up:—Mine office and office, dwelling house, smith and fitting shop, store room for keeping mine materials in, powder magazine, house for keeping horse feed and harness in, and stables

35 feet long.—Generally. The directors regret that so far progress and discoveries have not been more satisfactory. The mine management has been changed and placed in the hands of Mr. Edward Halse, A.R.S.M., M.I.M. and M., &c., the representative of Messrs. James Brothers, who advises not to continue the sinking of the main engine shaft until the correct course and depths of the lode have been more completely exploited. —Mr. Halse wrote under date August 5. I went down the Harman shaft and examined the reef at the 22 feet level. The roof for the 35 feet of open drive appears to be from 3 to 4 feet in width, and consists of favourable looking laminated quartz with fine gold well disseminated throughout. I roughly sampled two piles of dump consisting of quartz raised from the reef in the drive. Sample No. 1 went by assay 15 dwts. 14 grains of gold per ton. Sample No. 2 (from the north end of the reef) went 12 dwts. Stones from the reef dolly well, giving good colours of fine gold. I also sampled the dump of ore from the pot hole close to the condenser shaft (water shaft), and the dump of ore taken out of that shaft. The former went 7 dwts. 12 grains, and the latter 9 dwts. 5 grains of gold per ton. The water shaft is said to be 23 feet down. The ore consists chiefly of limonite (hydrated peroxide of iron) with some quartz. The gold in it must be very fine as it pans badly. I propose to prove the reef in the Harman shaft northwards as rapidly as possible, in order to ascertain if the shoot of gold continues in that direction, and as soon as pumping is commenced to sink in the reef in the water shaft in order to prove same in depth. Owing to the presence of water at a very short distance from surface it has been impossible to proceed with sinking until the pumping plant is erected, but the manager now cables that development is being proceeded with vigorously.

MCKENZIE GOLD MINES.—Fortnightly report of Mr. D. W. Welch, the mine manager:—Glenloth. Main engine shaft, 120 feet level south drive on lode advanced 1 foot, total distance from shaft 45 feet. Lode about the same as last report. North drive on lode same level advanced 9 feet 6 inches from shaft. Lode from 6 inches to 1½ inches wide, and shows gold by dish prospects. Am now preparing to sink shaft to water level.—No. 1 shaft. Stoping south below 40 feet level with two men. Lode from 6 inches to 10 inches wide, showing fair gold. Also sinking No. 2 winze from 40 feet level to 60 feet level of No. 2 shaft.—No. 2 shaft, 60 feet level. North drive advanced 10 feet, total distance from shaft 65 feet. Lode very small in face. Have stopped this drive for the present. South drive same level advanced 9 feet. Total distance from shaft 68 feet. Lode from 6 inches to 15 inches wide, estimated yield 1 ounce 5 dwts. gold per ton.—No. 3 shaft sunk 8 feet, total depth from surface 30 feet. Lode small in bottom of shaft. Have stopped this shaft until present crushing is completed.

PULIDO.—Manager's report: The Pulido Mining Company (Limited) are vigorously prosecuting work at two of their properties, viz., the Merces and Val de Marcos Mines. An efficient pumping gear has been installed on the former mine, the mine freed of water, galleries cleaned out and repaired, and important development work commenced. The mineral deposits have been thoroughly examined, and the most important selected for present and future work. A shaft now being sunk below the 40 metre level will soon reach a depth of 60 metres, when the contact deposit will be cut into and opened on. Several shipments of mineral have been received, and others are now on the way. A large proportion of the mineral received having been selected from the re-opening of old workings, and from heaps lying at surface, the yield of both copper and gold has not been as high as may be expected in future shipments. Present developments are producing a higher grade of ore, and when the deposit above referred to has been opened at the 60 metre level a still further improvement may be expected. Samples taken from large decomposed iron outcrops, carrying little or no copper, have recently been assayed for gold, both at the mines and in London. The result has proved decidedly that the occurrence of gold is not in any way connected with or influenced by the occurrence of copper in the ore. There are apparently large quantities of this particular grade of ore available, and it is hoped that during the next few months the investigations now in hand will warrant the expense of erecting a trial plant for the treatment of this ore on the mine. The Val de Marcos Mine has been largely developed to the depth of 50 metres. The vein opened, without doubt, is a true fissure vein, and the work of sinking to a depth of 100 metres has been commenced. An engine suitable for both hoisting and pumping is now on order, and it is hoped to have the same erected and in working order by the end of the coming month. The sinking of the shaft, together with the crosscutting to a parallel lode will prove the value of these lodes in depth. A small shipment of ore recently mined from the upper levels gave an average yield of 16 per cent. copper. A large amount of exploratory work is also being carried out on various other concessions.

WORCESTER EXPLORATION.—Details of working for July: Tons milled, 2510; from south reef, 1988; from main reef, 1535. Stamps working, 20. Number of days mill ran, 29¾. Yield of gold, 2009 ounces 11 dwts. Concentrates, 448 ounces 16 dwts. Total, 2458 ounces 7 dwts. Profit, £4117 15s. 4d.

CURTIN DAVIS PROPRIETARY.—Extract from letter received from mine manager, dated August 1:—I am more than ever impressed with the value of this mine as we get into the hill and the settled country. The results of this week's assays go to prove that our mine is underground and not on the surface as many people supposed. The clean ore is assaying much higher than when the drives were shallow. The fahl ore from 183 feet in the 560 feet level is nearly 300 ounces better than anything we have previously had only once before have we had over 500 ounces from the 680 feet level, and we now have 558 ounces from 212 feet in the tunnel. From 164 feet in the 340 feet level we have obtained the sensational return of 2976 ounces of silver per ton, and 21·6 per cent. of copper. This from our deepest level is most satisfactory, and clearly shows that we have a mine ahead of us and below us. This ore was taken from a vein about 3 inches wide of fahl ore and oxidised lode matter. I have some nice pieces broken from the face: if you wished I could send you a specimen. Since closing my report this evening we have broken into some very pretty fahl ore in the 560 feet level about 6 inches wide and looking remarkably well. I have a high opinion of the block of ground above this level to the 420 feet level and also below to the 680 feet level. The end of the 180 feet level is about as far south as the 420 feet level was when we passed through the schute of oxdised ore, and our last assays from the face are the highest we have had. This gives me great confidence in the future of the mine.—Assays. 680 feet level fahl ore 353 ounces 10 dwts. 3 grains silver, 32·4 per cent. copper. 420 feet level fahl ore and copper pyrites 227 ounces 16 dwts. 3 grains silver, 15·6 per cent. copper. 560 feet level fahl ore and copper pyrites 727 ounces, 16 dwts. 6 grains silver, 10·8 per cent. copper. 680 feet level fahl ore and copper pyrites 506 ounces 6 dwts. 16 grains silver, 9·8 per cent. copper. 340 feet level fahl ore 2976 ounces 11 dwts. 17 grains silver, 21·6 per cent, copper. 340 feet level decomposing sulphides 62 ounces 1 dwt. 8 grains silver, 2·5 per cent. copper. 340 feet level gossan 11 ounces 15 dwts. 4 grains silver, copper trace.

NEW QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers, July 31:—Underlie shaft. The underlie shaft has been sunk a further distance of 28 feet, making it 140 feet from level. The formation is going at a much steeper grade, the reef in the face averaging about 1 foot in thickness. Eastern level has been extended a further distance of 35 feet, making it 120 feet from straight shaft, the reef averaging about 15 inches. Stoping has also been carried on over this level on a reef averaging about 15 inches. Quality of quartz raised during fortnight 386 tons.

SEGOVIA.—The secretary reports that he has received the following intelligence from the superintendent at the mines: After a run of 1149 hours we cleaned up 23·7 ounces of gold, 23 ounces of which was taken from undercurrents. There have been masses of pipe clay and very little water, the gold has been extremely fine, no coarser than flour, but the front is much better in appearance, and a second layer of gravel has just been opened below the pipe clay, which takes the place of bedrock. It now appears that there is a second layer of gravel, which may develop and show a deep channel under the end, which we have been exploring.

TRION VALLEY.—One of the directors proceeded last week to the company's property to make a careful inspection of the work done, and he reports:—I found all men and boys at work, the wheel and upper engine working well. The 12 fathom level was partly clear. New ladders and relining and timbering the shaft being completed so far, and ladders ready for lower levels with all wood cut out, and at present rate about a fortnight hence will see the bottom level ready for working. All other repairs to ladders and floors, leats and launders, were in steady progress and would be completed very soon. New legs and bearers for the pump rods had been fixed for the whole length as required, and the work has been thoroughly well done throughout and all machinery is working as smoothly as possibly. Both engines and wheel are in perfect order and fit for immediate start and everything necessary has been done with great care and economy. There is sufficient water for three to five revolutions a minute for the wheel, which does good work. The directors anticipate that in about a month's time sufficient fresh wrought ore will be at the back to enable a good crushing to be made, and then it is proposed to go on working the second level sufficient to keep the stamps at work and at the same time to continue sinking the shaft.

WASSAU (Gold Coast).—A circular issued to the shareholders states:—During the month of June last the 10 stamp mill worked 16 days 18 hours, and crushed 237 tons of ore, producing 410½ ounces standard gold, and giving a yield of nearly 1 ounce 8½ dwts. per ton. This realised £1600 19s. 11d. Remittances received for the first four week of July have produced 680 ounces 17 dwts. standard gold, which realised £2602 0s. 9d. Owing to the misinterpretation of a cablegram the full returns for July were not published before. A further remittance for the last few days of that month has now been received, and has produced 215½ ounces of standard gold, which realised £841 11s. 6d. Total for the month 896 ounces 7 dwts., value £3443 12s. 3d. The 10 stamp mill worked 17 days 23 hours, and crushed 3 8 tons ore, giving an average yield for the month of 2 ounces 18 dwts. Return cabled for August, 622 ounces fullion.

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WEST AUSTRALIA GOLD FIELDS,

COOLGARDIE.

(BY A CORRESPONDENT.)

A SPECIAL reporter of the *Melbourne Age* is giving his opinions of the fields in some articles written for that journal on 17th and 18th July last, and says:—It is quite time the public should know the real unvarnished truth about West Australia as to whether the present prospects and future results are as good as represented. The telegrams from the mining fields of West Australia are, as is quite clear to any reflective mind, grossly exaggerated—that is perfectly obvious to the merest tyro in mining. In the description of the trip from Melbourne to Perth he says:—The "gold fever" is a raging epidemic on board, of course, but we are not nearly all going in search of the metal in its raw state. Far from it. We are a motley lot altogether. One man on board is a pianoforte tuner; imagine his fate on Coolgardie. Then follows the description of other passengers, and finally two miners from Hill End way, New South Wales. They are the only two genuine miners in the saloon. Another is going over in the important "rolé" of a mining expert. Wonderful men these miracle workers, who can float anything from an iron rail to a sunken ship. That, no doubt, is why they are paid so handsomely, and it also explains the anxiety of the company promoter to subject the expert to a process of lubrication—to "grease his palm," as one of them lately expressed it, with such charming ingeniousness. I feel an immediate interest in our expert, and after a little conversation I find that his experience in mining was gained as a trucker in a Bendigo mine. His last occupation was a shuttle winder in a Ballarat woollen mill. In West Australia the bogus mining expert flourishes with the vigour of tropical vegetation. West Australia is a long way from anywhere, and who is to contradict even the most imaginative flights of these highly-endowed artists? When the day of reckoning arrives in West Australia, as it will as surely as the sun will rise in the heavens, it will be found that the bogus mining expert has played an important figure.

The chief geological features of the Yilgarn gold field, which embraces Coolgardie, Kalgoorlie, Southern Cross, down to Dundas on the south and up to Menzies on the north, are indurated slates and schist, dykes, and granite and other intrusive rocks. Gold is found in a number of auriferous deposits in the form of either alluvial wash or veins. The latter are chiefly found in diorite rock, and also in diabase rock, which is a slightly different form of diorite. The granite and sedimentary granitic deposits are also intersected by reefs.

Compared with the reefs of Bendigo or Ballarat, those of Coolgardie and the outlying districts do not present those conditions associated with permanency in regard to going down to great depths or extending any distance in an unbroken lode line. The sudden disappearance of both stone and gold in a number of blows of quartz gives a clear idea of the instability of the lodes. If the Bendigo reefs had consisted of blows of stone that petered out a few feet from the surface, Quartzopolis would not be the wealthy city it is to-day, after nearly 40 years continuous working.

The curse of Coolgardie—indeed, of West Australia—aptly described as a land of sand, sorrow, and shilling drinks—is the want of a good supply of water for mining purposes. The rich alluvial followed by the lode, gold soon petered out in Bayley's claim. Starting with an amazing yield of 21,565 ounces from 40 tons of ore—an average of 538 ounces to the ton—dollied between March 1, 1893, and April 3, 1894, the yield dropped during the next four months to 8635 ounces from 396 tons—an average of 21 ounces 13 dwts. Even that, however, was an average that would yield rapid fortunes. But as the shaft went down, and the reef opened up, the returns became smaller and smaller, until in May, 1895, the yield dropped to 290 ounces from 336 tons—less than "ounce stuff." Here was a case of a rocket and the stick if you like. To-day the mine is practically dead when the present yields are compared with those first obtained. That the shoot of gold does not go down very deep was shown by the fact that the average yield from Bayley's Reward No. 1 South is only the very common-place one of 1 ounce to the ton.

The irregularity and want of continuity of reefs, the poorness of the stone, especially after going down a few feet, the excessive cost of treatment, living, and other charges, are some of the reasons why even a moderate success has not been attained. But, worst of all, the friend of over-capitalisation, which would kill the richest gold field in the world.

COLLIERIES CLOSING.—Another effect of the labour difficulty has been the closing down of the Haswell Pit, north-east Durham, employing 2000 men; it is to be closed permanently. Rainton Pit, with 1000 men, has just been laid idle, and it is expected that Hetton will shortly be also closed. The cause is the fall in the average output per man, the working expenses not being reduced accordingly. The masters complain of the men reducing the hours in the old collieries, where the margin of profit is small.

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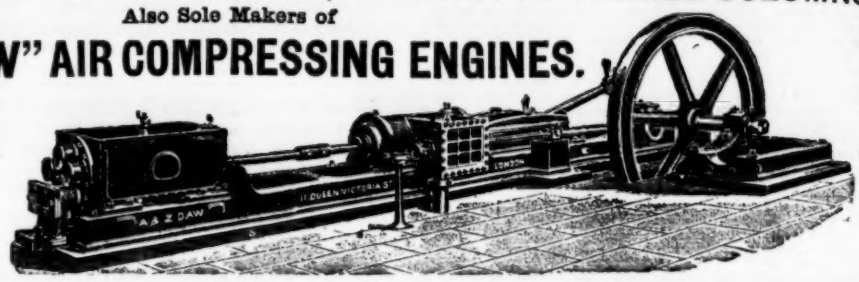

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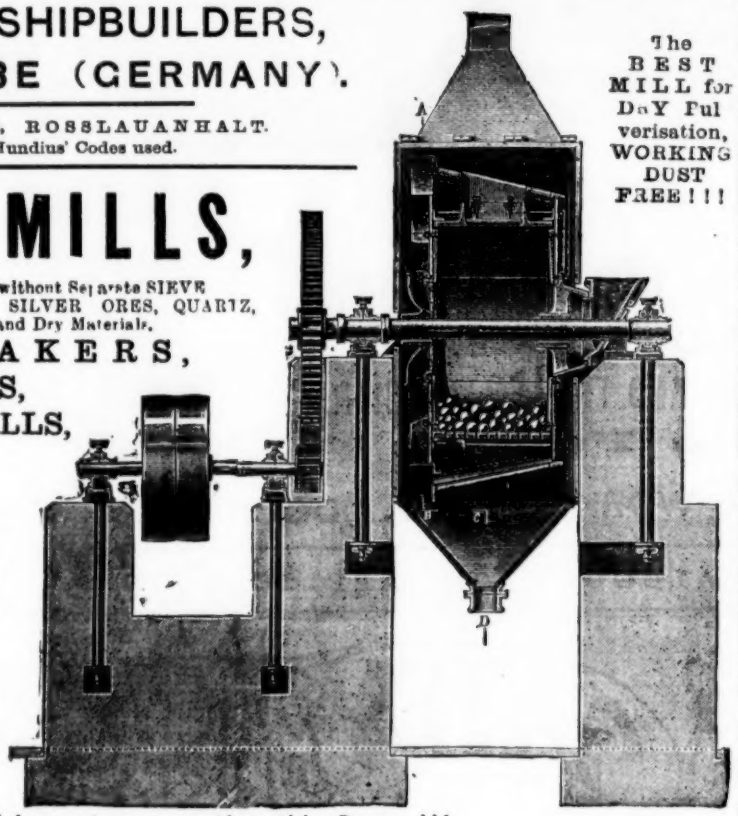

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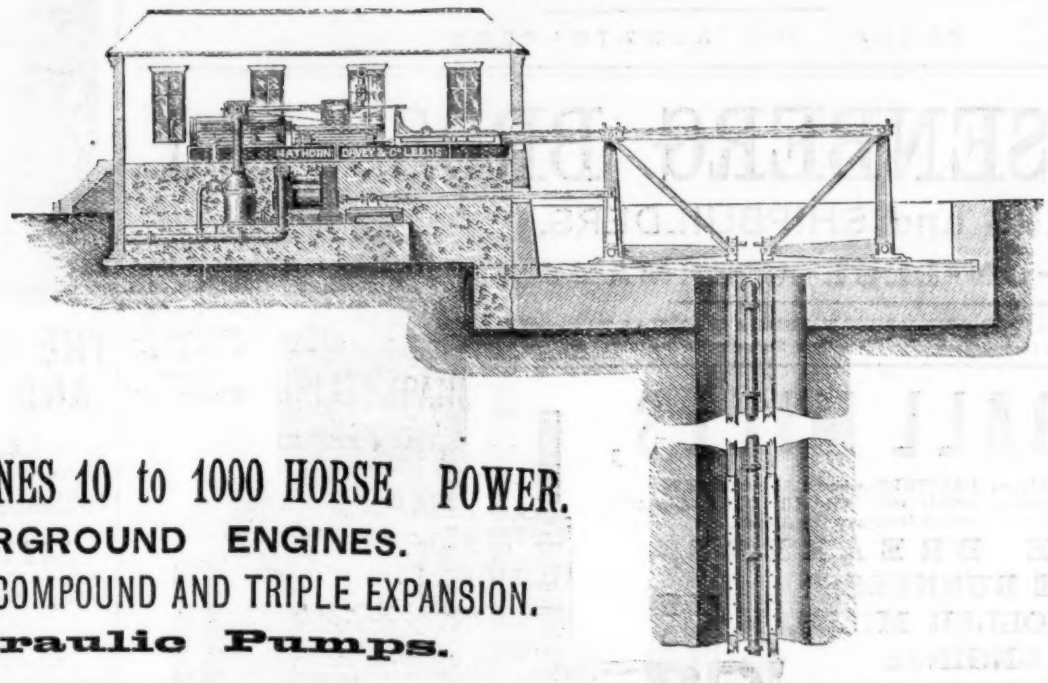

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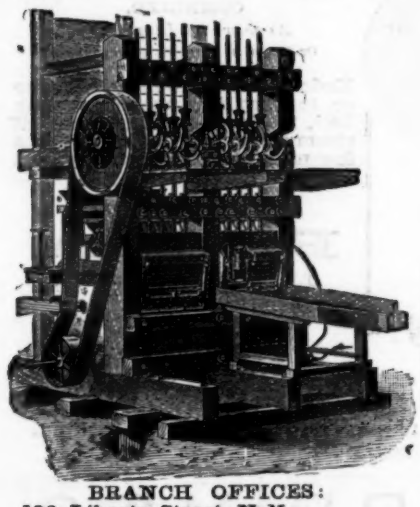

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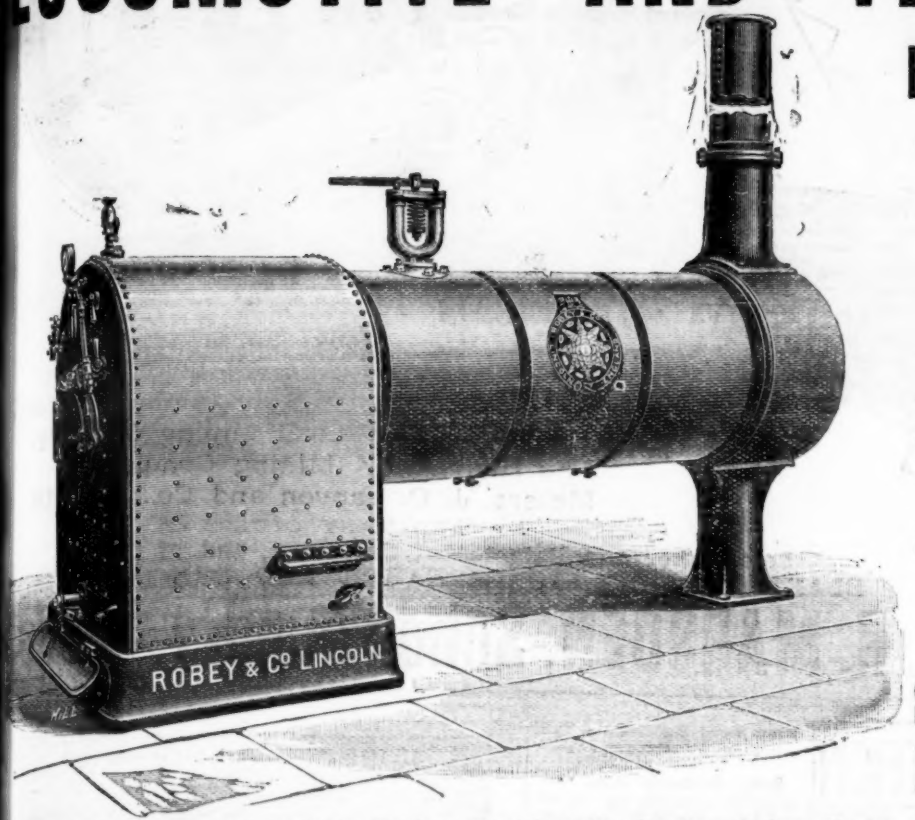

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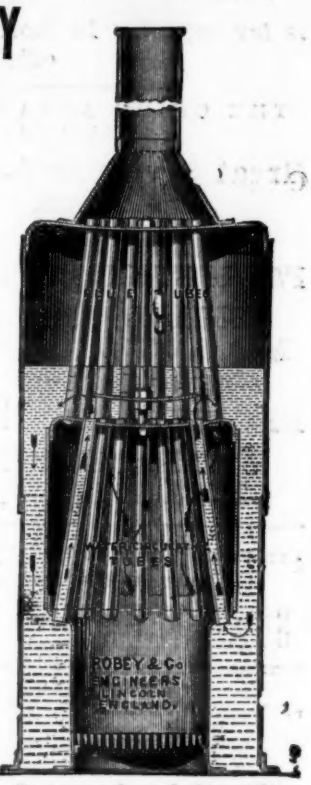

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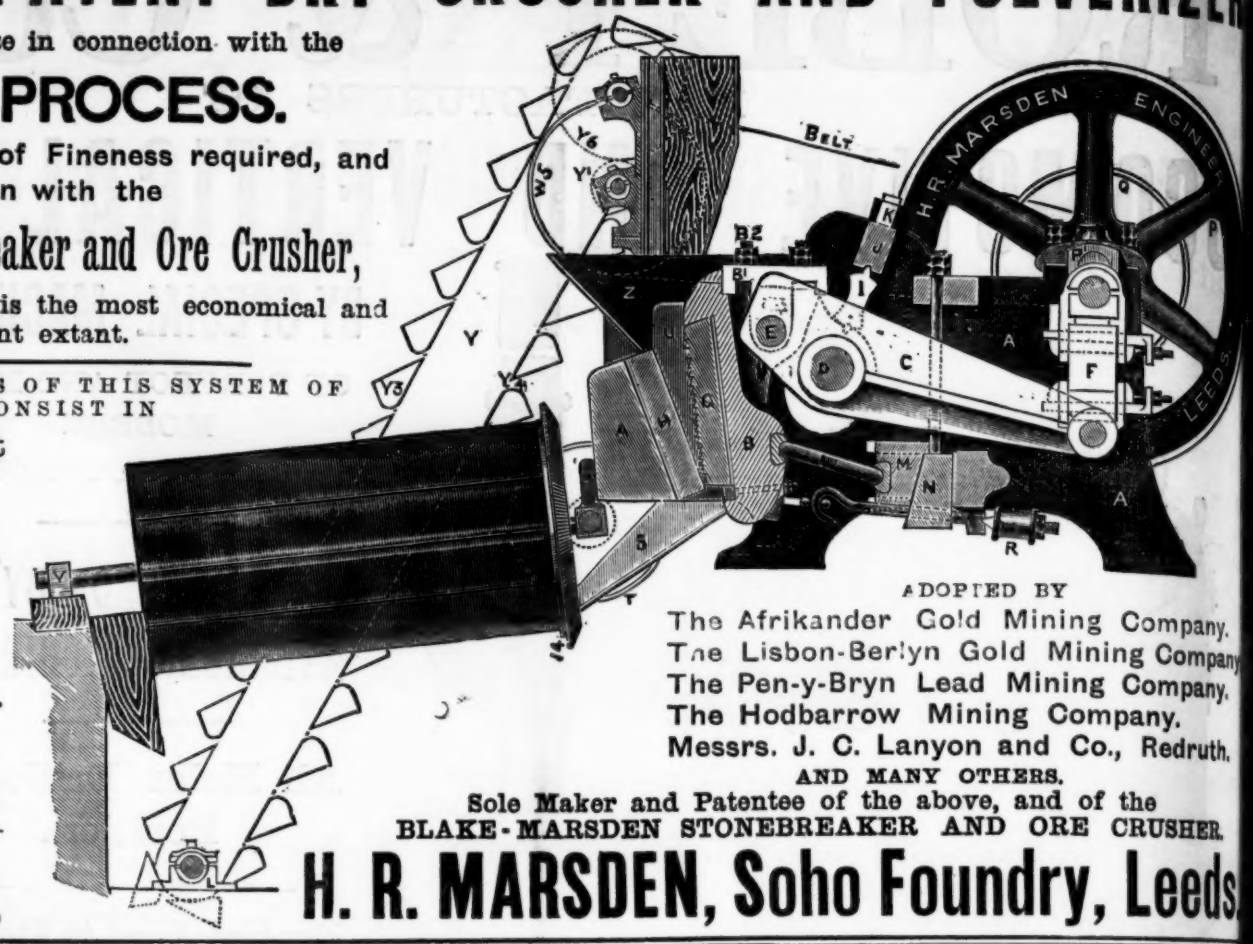

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